2013 Water Levels

Unit: **Goose Pen:** 2.0 is full pool (1' free board on east dike – dike in bad shape)

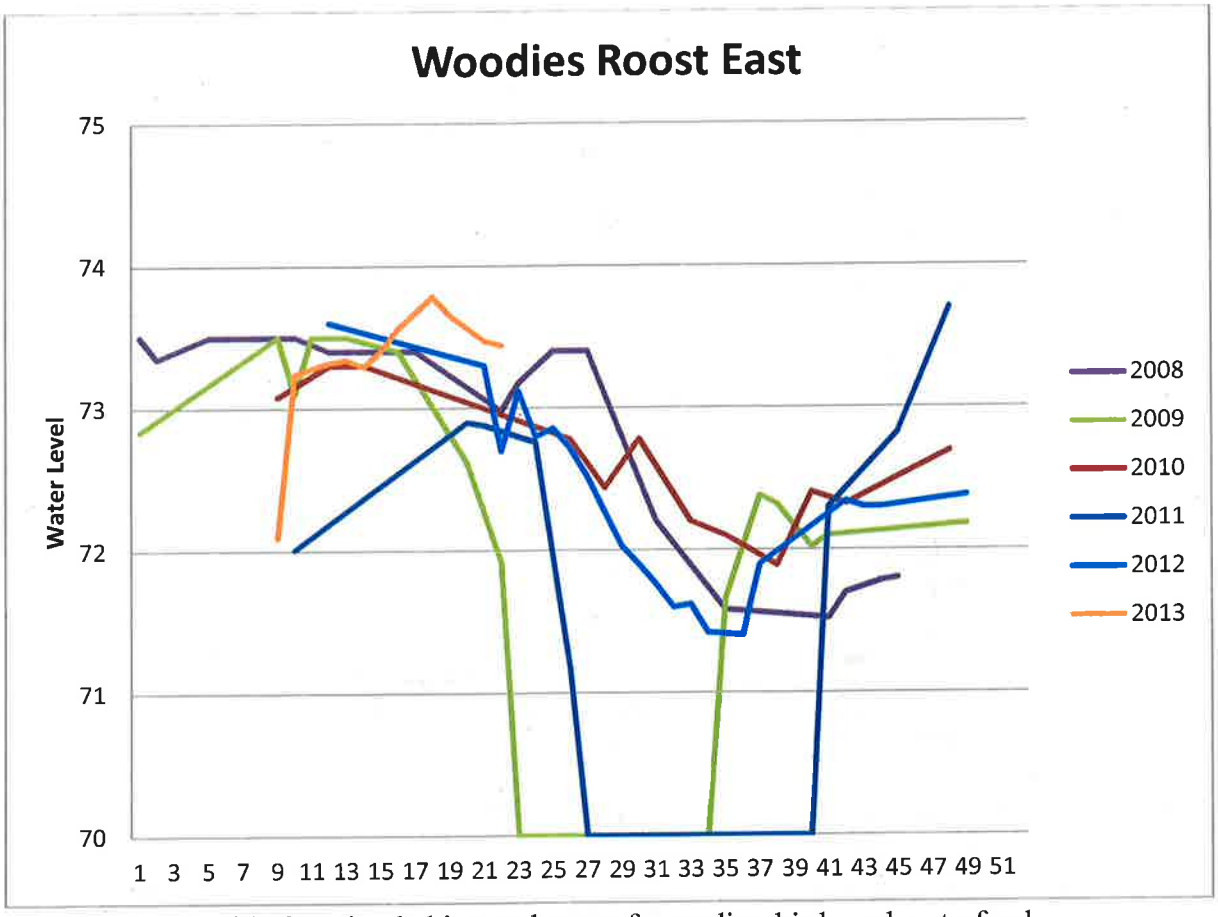
Desired water level		Wk #	2013 Date	Actual Water level Staff reading		Notes
Old	new			old	new	
			Jan.			
			Feb.			
2.0						
			Mar.			
			Apr.			
0.5			May			
			June			
		24	12		71.52	
		25	21		71.67	
		26	26		71.60	
		27	July 2		72.19	
		28	9	1.27	72.53	
		29	17		72.36	
		30	22		72.44	week 31 07/31 72.27
		32	Aug 8		72.17	
		33	16		71.96	
		34	22		71.87	
		35	29		71.90	
		36	Sept. 5		72.13	
		37	12		71.93	
		38	19		71.84	
		40	30		71.88	
		42	Oct. 7		71.86	
		43	23		71.84	
		44	29		71.77	
		45	Nov 8		71.91	
		46	13		71.91	
			Dec.			

Unit: Woodies Roost East

Acres:

2012 Activity: Water was pumped in though the states ditch in early October for hunts. New IGLD staff plate set in August. 2011 note: Water is too low for waterfowl hunts at 2.1 muck was in front of blind. Desired water level has changed from 1.7-1.9 to 2.4 due to movement of the staff gauge.

Draw Down Years: 2011 – due to dike construction. 2009 – drawn down mid April, completed by May 30th, flood mid Aug great millet germination; 2006 – drawn down mid march, completed mid April. Reflooded in Aug.



Unit Goals: Provide foraging habitat and cover for wading birds and waterfowl.

Objectives: Manage for hemi marsh conditions and watch invasives.

Strategies: Maintain full pool for invasives prevention and evaluate for flowering rush establishment.

Potential Problems: Beaver, fixed leaking gate on the north side in 2009, coordinating management with Magee's activities may require timing adjustments, This unit has a watershed to the south & will gain more water during rain events.

Repairs Needed: Rat holes in north dike need repaired

Unit: **Woodies Roost East –**

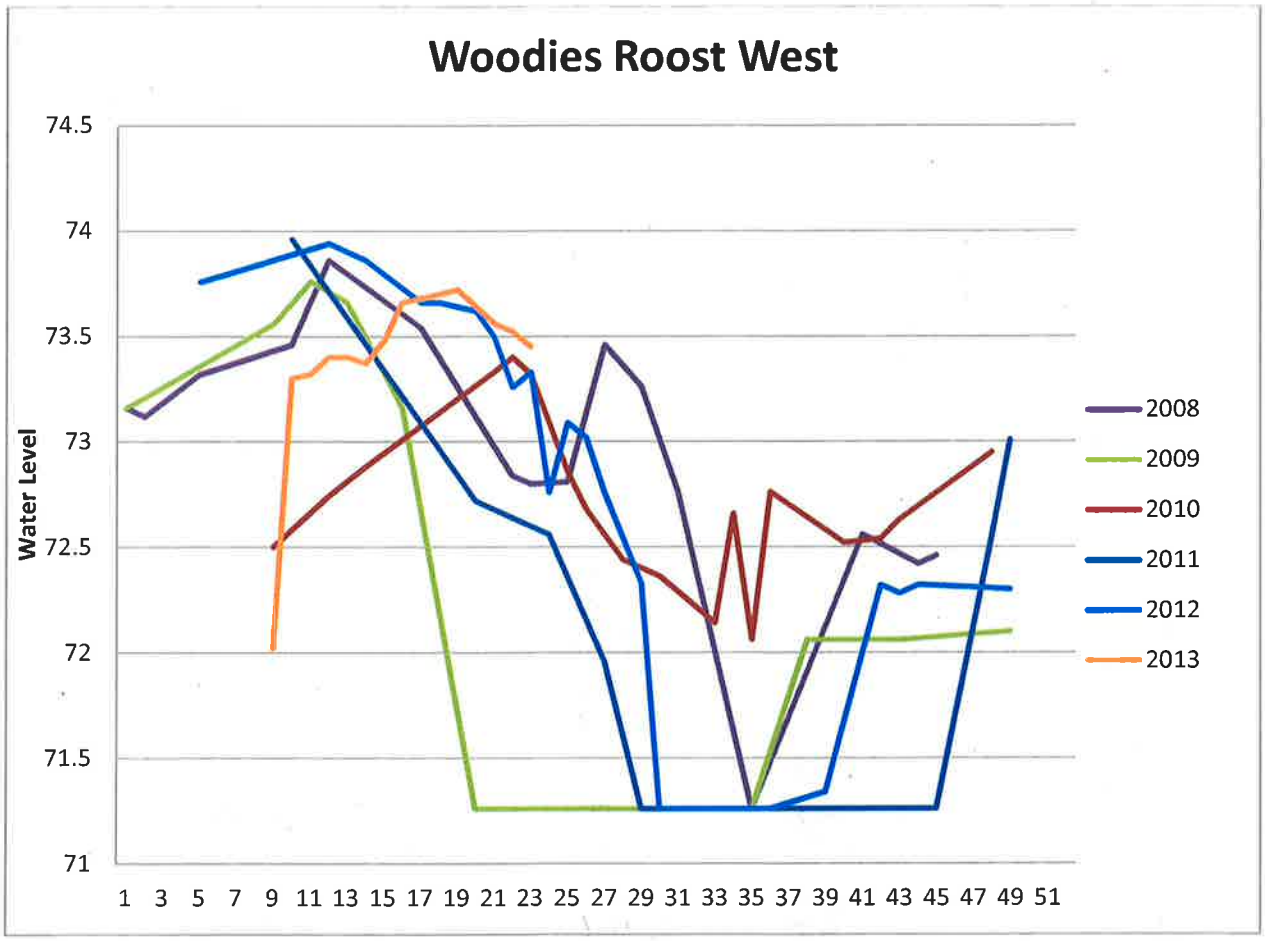
Desired water level		Wk #	2013 Date	Actual Water level Staff reading		Notes
Old	new			old	new	
			Jan.			
			Feb.			
			Mar.			
2.7-3.0						
			Apr.			
2.7-3.0						
			May			
		22	28		73.14	
			June			
		24	11		73.30	
		25	18		73.19	
		26	26		73.10	
		27	July 1		74.72	
		28	9		74.00	
		29	17		73.97	
		30	22		74.06	week 31 07/31 73.86
		32	Aug. 8		73.77	
		33	16		73.60	
		34	22		73.47	
		35	29		73.46	
		36	Sept. 5		73.70	Target = 2" above ring
		37	12		73.50	
		28	17		73.46	Closed WRE to WRW. Open 15" To ditch 10am.
		"	19		72.80	
		39	27		72.78	week 40 9/30 72.76
2.40		42	Oct. 1	2.04	72.79	
		43	23		72.78	
		44	29		72.76	
		45	Nov. 8		72.86	
		46	14		72.86	
			Dec.			

Unit: Woodies Roost West

Acres:

2012 Activity: Unit drew down due to drought. New IGLD gauge set in NE corner in August. Reflood in August, but could not reach full pool

Draw Down Years: 2012-drought, 2011 – construction of dikes. 2009 – drawn down mid April, completed by May 30th, flood mid Aug; 2006 – drawn down mid march, completed mid April. Reflooded in Aug.



Unit Goals: Provide foraging habitat and cover for wading birds and waterfowl.

Objectives: Manage for hemi marsh conditions

Strategies: Determine new full pool and maintain maximum level with pumping to open up cattails. Free flow water from Woodies Roost East when possible to reduce pumping costs. Evaluate for new hunt blind locations. Add one new blind?

Potential Problems: Beaver and construction

Based on previous years, full pool is 2.6, however the unit does not appear to be able to maintain this high of a level. There is likely a leak somewhere. Old staff plate meets bottom of unit at 0.8.

Repairs Needed:

I. Reslope south dike + rock, along borrow area.

II. WCS on N side needs repair, culvert rusting out and leaking.

Unit: **Woodies Roost West** – Based on previous years, full pool is 2.6. Bottom of unit at .8

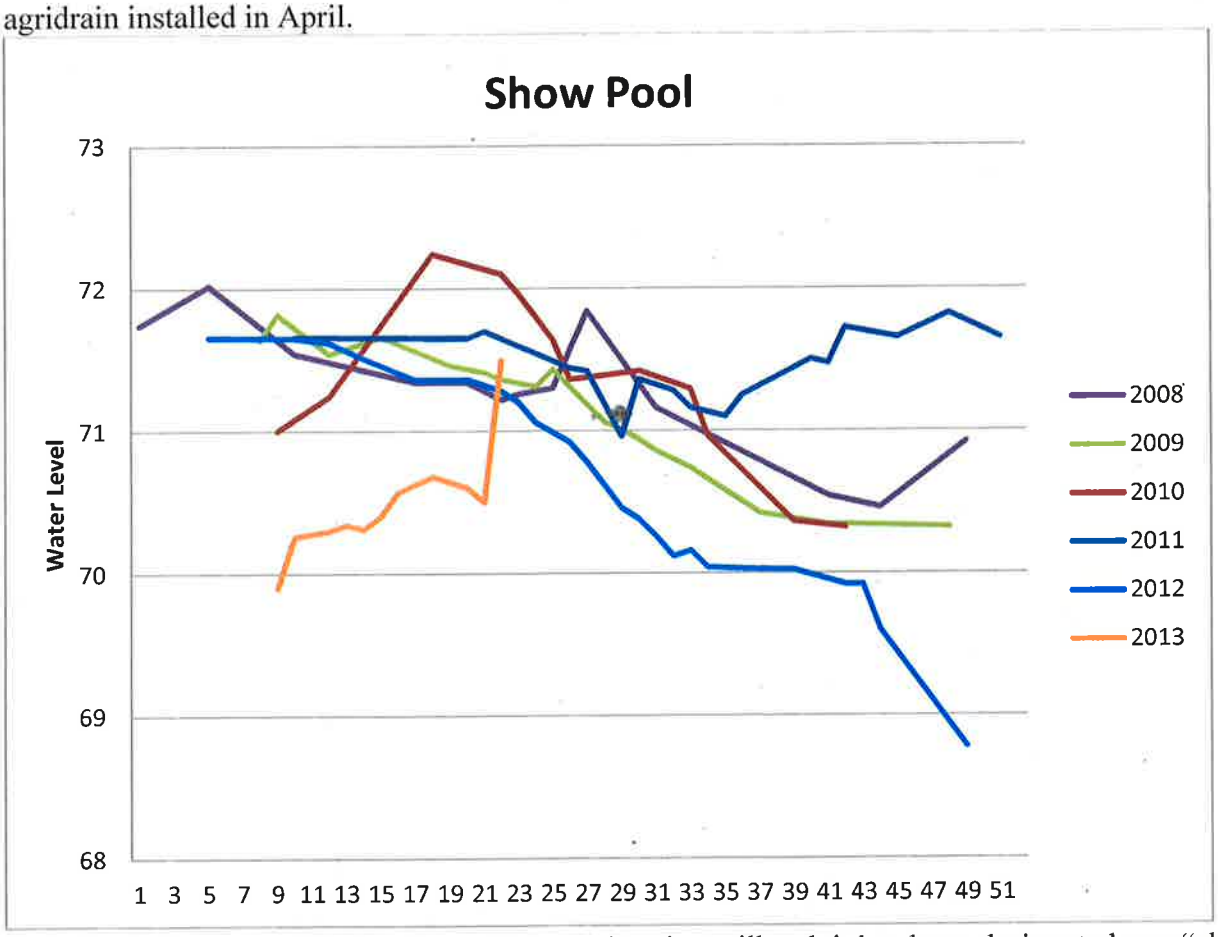
Desired water level		wk #	2013 Date	Actual Water level Staff reading		Notes
old	new			old	new	
			Jan.			
			Feb.			
			Mar.			
2.3-2.6						
			Apr.			
2.3-2.6						
			May			
		22	28		73.52	
		23	June 3		73.45	
		24	11		73.40	
		25	21		73.28	
		26	27		73.28	
		27	July 1		73.60	
		28	4		74.84	
		29	17		74.04	
		30	22		74.12	week 31 07/31 73.94
		32	Aug. 7		73.86	
		33	16		73.70	
		34	22		73.58	
		35	29		73.84	
		36	Sept. 1		73.77	
		37	2		73.61	
		38	16	2.26	73.54	Closed WMA to work road
		"	19		73.52	
		39	27		73.56	week 40 9/30 73.54
		42	Oct. 7	2.26	73.53	73.53
		43	13		73.52	
1.2		44	29		73.48	
					73.56	
		45	Nov. 8		↓	
		46	14		73.56	
			Dec.			

Unit: Show Pool

Acres: 41

2012 Activity: Unit dry except borrow areas due to drought, IGLD staff plate set but is incorrect.

Draw Down Years: 2012-drought, only water in borrow, 2009-Evapotranspiration resulted in water only existing in borrow areas in midseptember; 2005 – similar conditions as in 2009; 2004-agridrain installed in April.



Unit Goal: Because of the location of this pool to the trailhead, it has been designated as a "show" pool with the intent that it can provide viewing of waterfowl including other wildlife and be a model wetland. This unit will be managed as a permanent wetland with deeper water to over winter fish and provide public catch and release fishing opportunities.

Objectives: Increase diversity of emergent marsh vegetation and provide deep water for fish habitat.

Strategies: Monitor dikes, woods behind shop, and water depth on higher ground. Treat invasives. Phrag patches need sprayed in unit.

Management Strategy Constraints: East dike and south dike weakest/lowest of unit. Max water level is 5.48. Ideally, we'd have more water in showpool. The problem is low lake levels and lack of a water source. Future plans may need to think about dredging NS radar ditch or consider managing for other habitat types (ie – scrub/shrub)

Repairs Needed:

I.Reset IGLD staff plate to correct elevation. Above graph does not reflect actual elevation.

II. East dike shared with goosepen is getting high muskrat damage

III. South dike likely permeable when water is high, consider future management before repairing

Unit: **Show Pool** - Agridrain 15 ¾" wide. Max water level is ~~5.60~~ 5.48

Desired water level		Wk #	2013 Date	Actual Water level Staff reading		Notes
old	new			old	new	
			Jan.			
			Feb.			
			Mar.			
>5.5						
			Apr.			
5.48						
			May			
		22	28		70.52	
			June			
		23	4		70.46	
		25	21		70.40	
		26	26		70.34	
		27	July 1		70.80	
		28	10	5.80	71.28	
		31	31		71.20	↩
		30	~~27~~		71.29	↩
		32	Aug. 8		71.16	
		34	22		70.96	
		35	29		70.96	
		36	Sept. 1		71.17	
		37	12		71.05	
		38	19		70.98	
		40	30		71.02	
		42	Oct. 7		71.02	
		43	23		71.00	
		44	29		70.97	
		45	Nov. 8		71.06	
		46	14		71.06	
			Dec.			

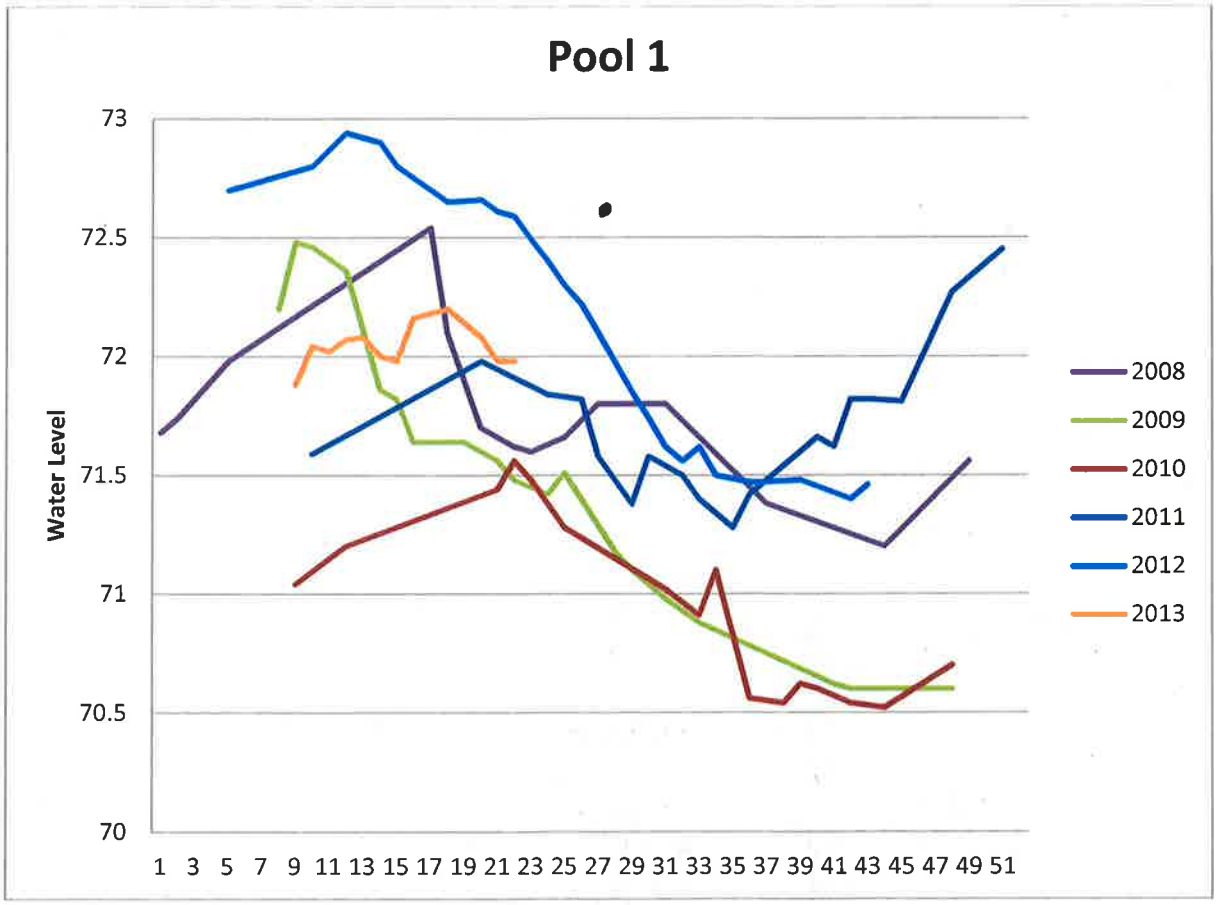
Unit: Pool 1

Acres: 343

2012 Activity: Water levels reached 3.24 feet in spring, which strained common dike with state. One hole patched by state in common dike. High levels not removed in spring, which proved beneficial in drought year by maintaining water in the unit throughout the year.

2011 Notes: Water was at good level most of the year but record level rainfalls made this unit deeper than normal in November and December. At 2.5 the water level in front of hunt blind 1 is 3 ½ feet deep.

Draw Down Years: no record



Unit Goal: Provide habitat for nesting common terns, foraging herons, mussel beds, rails, and fish. As well as provide a rest area for waterfowl.

Objectives: The topography of this unit allows for a variety of water level depths. To provide habitat for nesting common terns, fish and mussels, maintain deep (3-4ft) open water areas. Provide emergent and submergent wetlands for wading birds, waterfowl and invertebrates. The higher elevation areas along the south and north parts of the unit will provide flooded grass and sedge areas for rails.

Strategies: Leave high waters on this spring, no active management.

Management Strategy Constraints: Screw gate on west side not able to close – it keeps coming off of frame. Gate to lake is closed.

Repairs Needed: Water control structure on west side - screw gate comes off braces when closed. Currently open, but creek gate closed.

Unit: **Pool 1** – Management may change based on Crane Creek structure

Desired water level		wk #	2013 Date	Actual Water level Staff reading		Notes
old	new			old	new	
			Jan.			
			Feb.			
			Mar.			
2.3-2.4						
			Apr.			
			May			
		22	28		71.98	
2.0			June			
		24	12		71.92	
		25	21		71.85	
		26	26		71.80	
		27	July 1		72.36	
		28	8		72.64	
		29	15		72.54	
		30	22		72.66	07/31 72.57
		32	Aug. 8		~~72.57~~ 72.52	
		34	22		72.34	
		35	29		72.36	
					–	
		36	Sept. 1		72.62	
		37	12		72.52	
		38	19		72.44	
		40	30		72.48	
					72.48	
		42	Oct. 17		↓	
1.1-1.2		43	23		72.46	
		44	29		72.43	
		45	Nov. 8		72.50	
		46	14		72.49	
			Dec.			

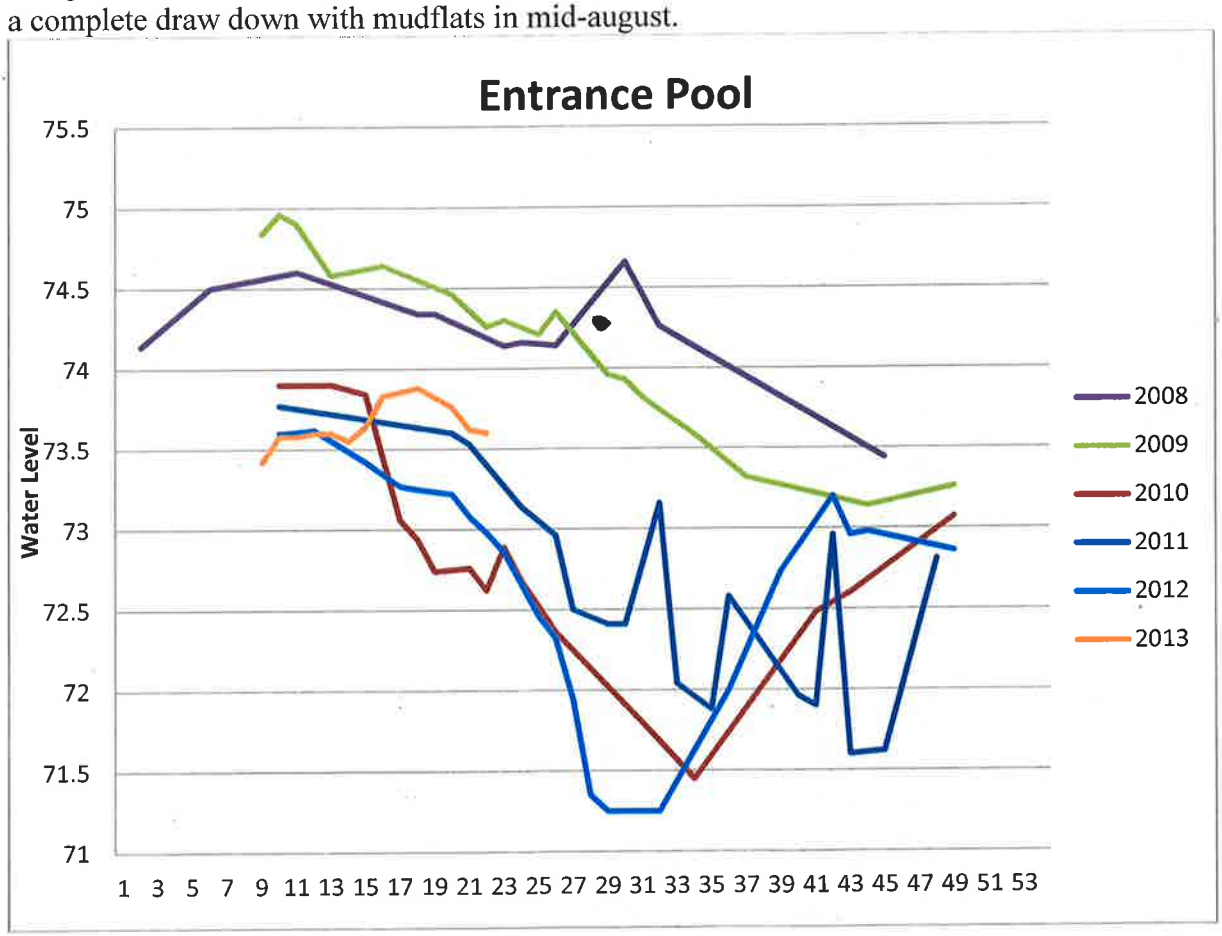
Unit: Entrance Pool

Acres: 150

2012 Activity: Dry by summer due to drought. State mowed openings with marshmaster, then reflooded in September for fall migration.

2011 notes: This unit fluctuated a lot by the end of the year because of a board that was pulled sometime in May or June without our knowledge. Rainfall and a leaking structure made this unit fluctuate highly.

Draw Down Years: 2011-summer due to drought. 2010 – D.D. in June tried reflooding in October but there was not enough water to free flow needed to pump with a Thompson. 2009 - evapotranspiration resulted in a draw down with water only remaining in channel along Entrance Rd; 2007 - evapotranspiration resulted in a draw down with water only remaining in channel along Entrance Rd; 2005 – Construction (new stoplog structure) and evapotranspiration resulted in a complete draw down with mudflats in mid-august.



Note: 1.0 = water only in channel.

Unit Goal: Provide a diversity of marsh type habitats, ranging from cattail stands to open water. Attract a variety of waterfowl, shorebirds, water birds, and wetland animals to provide opportunities for wildlife viewing. Control exotic invasive species.

Objectives: Provide shallow to deep emergent marsh. Maintain higher water levels to combat purple loosestrife.

Strategies: What is full pool? TBD. Maintain water levels.

Management Strategy Constraints: Water can only be added by using a portable pump.

Repairs Needed: Check Boards make sure they are functioning.

Unit: **Entrance Pool**

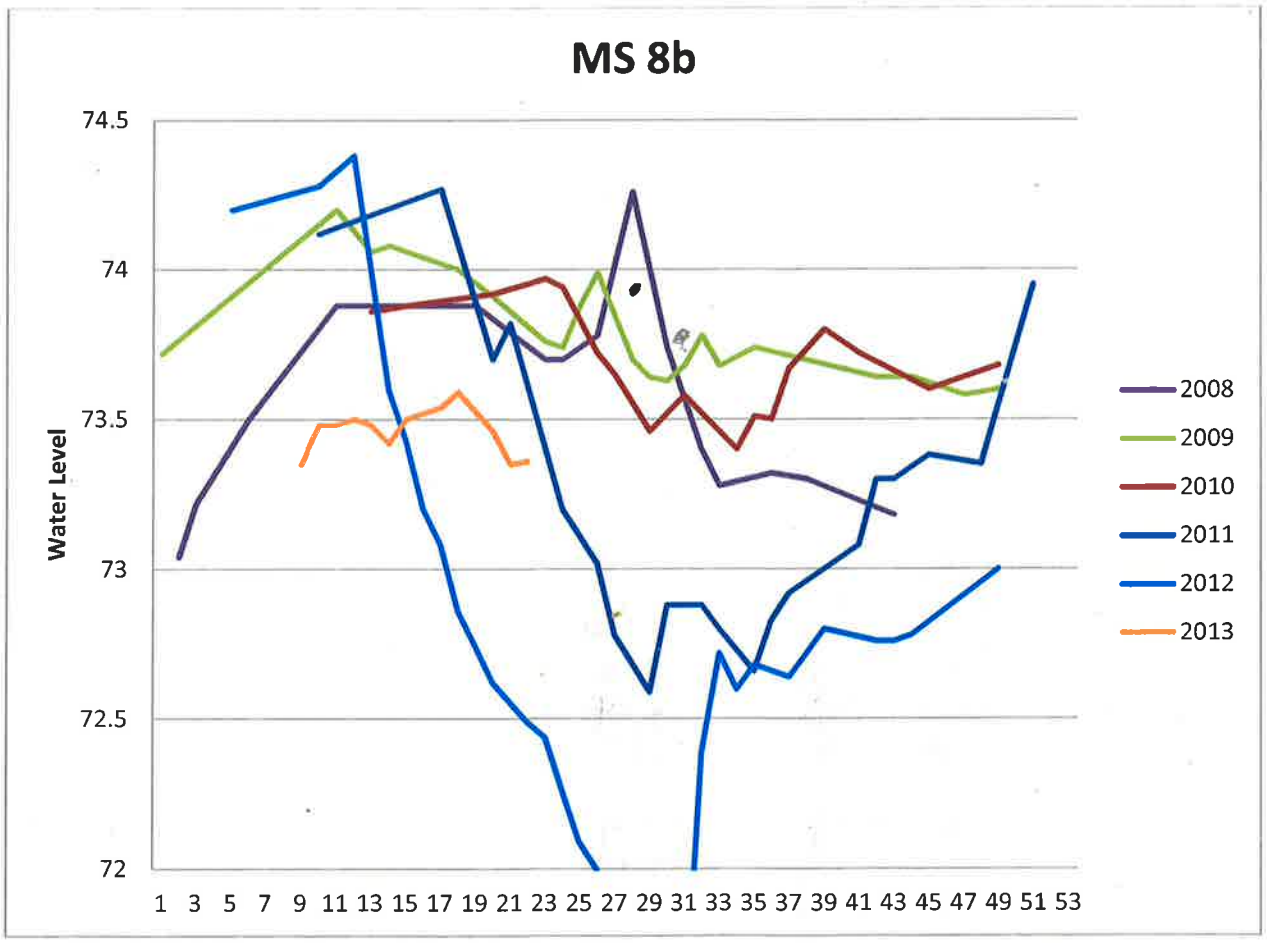
Desired water level		Wk #	2013 Date	Actual Water level Staff reading		Notes
old	new			old	new	
			Jan.			
			Feb.			
			Mar.			
<1.7						
			Apr.			
1.0?			May			
		22	28		73.60	
			June			
		23	4		73.44	
		25	21		73.33	
		26	26		73.24	
		27	July 1		73.70	
		28	10		74.28	
		29	17		74.16	
		30	22		74.24	07/31
		32	Aug. 7		74.06	
		34	22		73.84	
		35	29		73.84	
		36	Sept. 1		74.04	
		37	12		73.90	
		38	19		73.82	
		39	27		73.86	
		40	30		73.85	
		42	Oct 17		73.85	
1.28		43	23		73.82	
		44	29		73.78	
		45	Nov. 8		73.88	
		46	14		73.88	
			Dec.			

Unit: MSU 8B

Acres: 100

2012 Activity: Partially dewatered for spring shorebirds, allowed to naturally drawdown in summer. Used marsh master to smash openings in vegetation. Excellent food plants—nutsedge, nodding smartweed, barnyard grass. Added shallow water in July/Aug for fall for migration. 2011 notes: Water was at desired levels from March to June but then structure was left open without authorization until mid-July.

Draw Down Years: 2011-spring shorebirds and moist soil plants, fall reflood, 2005 - drawn down briefly in June for construction and reflooding began by end of month; 2004 – drawn down March and reflooded in late August; 2003?



Unit Goal: Provide resting and foraging habitat for migratory birds.

Objectives: Manage against invasives and allow for more open areas in the marsh.

Strategies: Maintain high water levels in the unit throughout the growing season. This will likely require periodic pumping and active management.

Management Strategy Constraints: Water levels may need to be manipulated to install a pump structure from the Visitor Center ditches into 8b as well as add an agridrain to the south east corner of the unit. Full pool 3.40-3.46, 73.7– May need to pump to maintain high water.

Repairs Needed: Pump (motor) was replaced in September 2010.

Unit: **MS 8b** - Full pool 3.40-3.46 – Readings can be taken from the SE structure measuring from water's surface to top of brace. Tape measure reading of 21 ½" = 3.48

Desired water level		Wk #	2013 Date	Actual Water level Staff reading		Notes
old	new			old	new	
			Jan.			
			Feb.			
			Mar.			
3.4/21.5"						
			Apr.			
			May			
		22	29		73.36	
			June			
3.4	73.7	24	12		73.26	
		25	21		73.18	
		26	27		73.14	
		27	July 3		73.60	
		28	9		73.88	
		29	17		73.74	week 31
		30	22		73.84	07/31 73.75
3.4	73.7	33	Aug. 13		73.67	
		34	8		73.72	
		34	22		73.53	
		35	29		73.56	
		37	Sept. 12		73.64	
		38	19		73.56	
3.4	73.7					
		42	Oct. 17		73.52	
3.4	73.7	43	23		73.48	
		44	29		73.45	
		45	Nov. 7		73.52	
		46	14		73.51	
			Dec.			

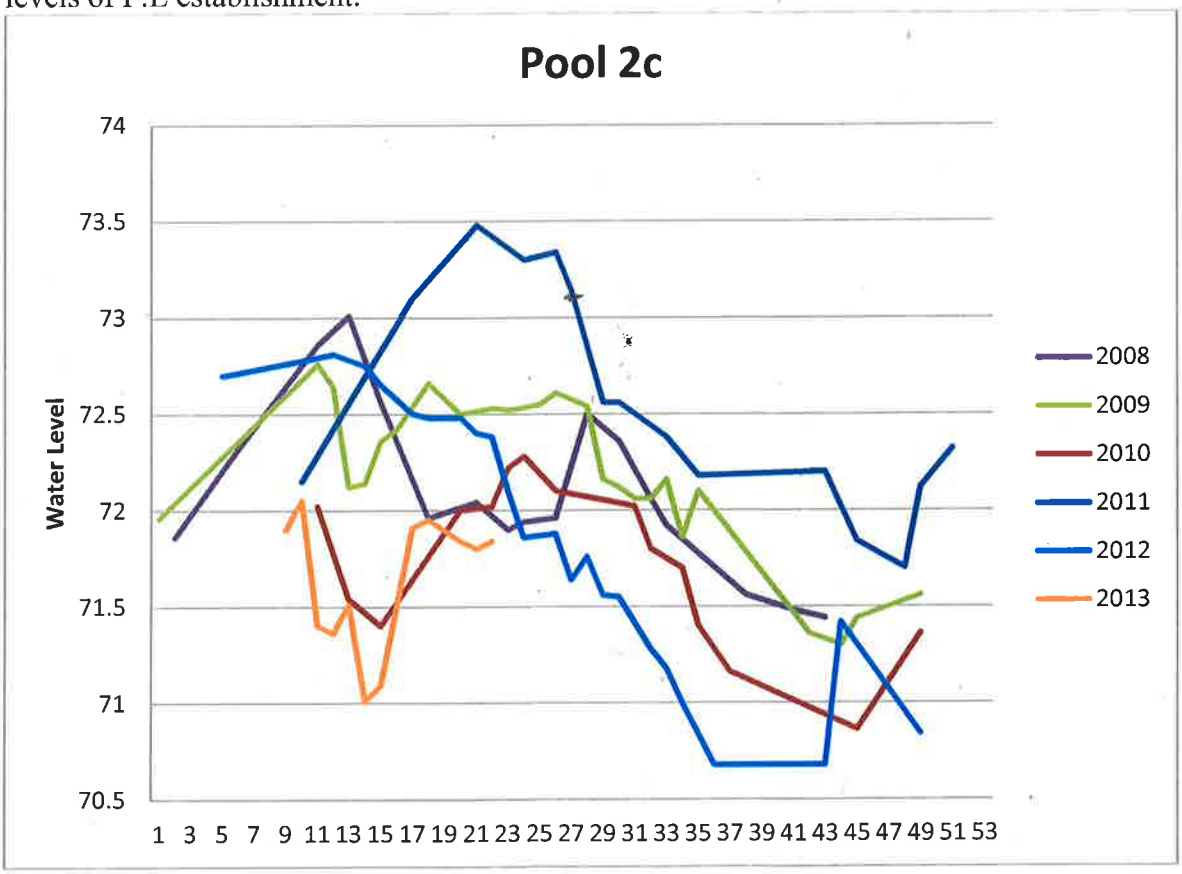
Unit: Pool 2C

Acres: 82

2012 Activity: Same strategy as 2011, but unit became low in fall due to lower lake levels and drought.

2011 Notes: This unit was opened to the Lake in the spring and late fall it fluctuated though out the year with lake levels. It was closed to the lake for trapping in late November. No pumping was needed.

Draw Down Years: 2012-partially in fall due to lower lake levels and drought, 2005 – Pumped down mid-March through end of May with 60% mudflats achieved, remainder 6 in or less. Unable to pump down further. Evapotranspiration led to most of unit drawn down by July. Unit gained water in August and reached May levels again. Unit was reflooded in September. High levels of P.L establishment.



Unit Goals: Attract a variety of waterfowl, shorebirds, water birds, and wetland animals to provide opportunities for wildlife viewing.

Objectives: Manage for hemimarsh conditions.

Strategies: With low lake levels anticipated, set gates to capture water from lake after carp run and leave open until ice up. Periodically check to make sure logs have not gotten stuck in screw-flap gates.

On average-high lake level years, unit can be managed as open to Lake Erie for fish access, after spring carp spawning is completed.

Management Strategy Constraints: Water can only be added with a portable pump or high lake levels. High lake levels can also inhibit taking water off the unit and free flowing into the lake. Siltation at outlet of Radar Ditch prevents water from dropping excessively during low water years or seiche events.

Repairs Needed:

Unit: **Pool 2c** – 2.0 on the gauge = 2 - 2 ½ feet of water across most of unit.

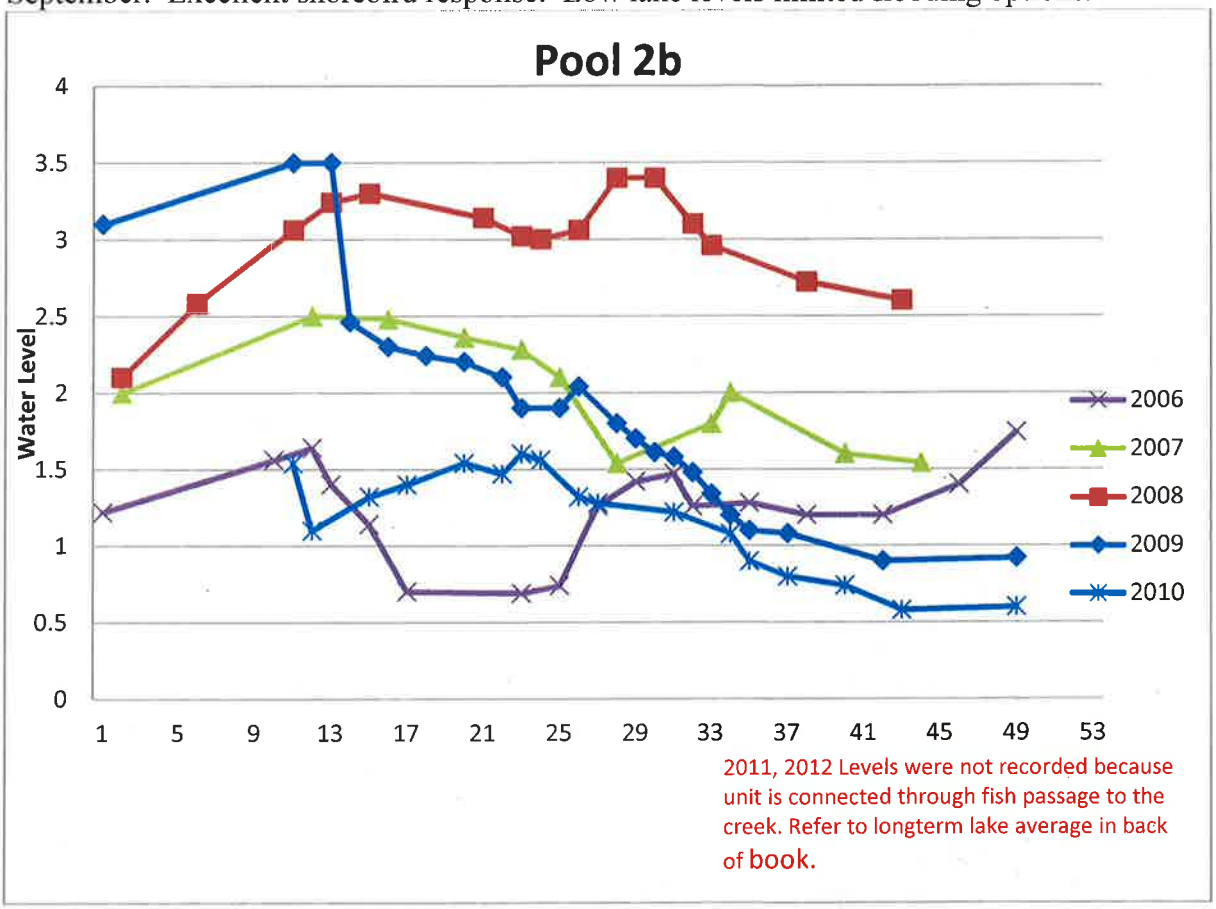
Desired water level		Wk #	2013 Date	Actual Water level Staff reading		Notes
old	new			old	new	
			Jan.			
			Feb.			
			Mar.			
						Set to flow gain water from ditch
2.0						
			Apr.			
			May			
		22	28		71.84	
>1.7		23	June 6		71.92	
		24	12		72.06	
		25	21		72.18	
		26	26		72.14	
		27	July 3		72.90	
		28		3.22	73.12	
		29	17		72.98	
		30	22		73.06	week 31 07/31 72.94
		33 7	Aug.	13	72.93	
		32 6	8		72.90	
		34	22		72.68	
		35	27		72.70	Pool 1 Ditch 71.68
		37	Sept. 12		72.77	
		38	19		72.69	
		40	30		72.70	
						Evaluate for removing some water
		42	Oct. 7		72.69	22-open 5" 72.67 (2.76) Target ~71.6
1.4		44	28		71.66	-closed at 10am
		43	23		72.46	
		44	29		71.69	
		45	Nov. 7		71.77	
		46	19		71.75	
			Dec.			

Unit: Pool 2B

Acres: 95

2012 Activity: Set carp grates before spring carp spawning, then open grates after spawning. Structure is managed as fully open to lake. Staff gauge readings not taken due to automated GOESS system for water levels and water quality. 2011: same as 2012

Draw Down Years: 2010- for construction of the fish passage. 2009- mid August draw down for fall shorebird migration, fair results achieved; 2006 – Unit was pumped down in mid-March and managed for mudflats & spring shorebird habitat through June. Unit was reflooded in July; 2005 – Pumped down early August for fall shorebird migration. 90% mudlflats achieved by early September. Excellent shorebird response. Low lake levels limited flooding options.



Unit Goals: Attract a variety of waterfowl, shorebirds, water birds, and wetland animals to provide opportunities for wildlife viewing.

Objectives: Manage as coastal marsh whenever possible, providing fish access and water quality benefits.

Strategies: Leave open to Lake Erie. Set carp exclusion grates as needed based on water temperatures. Monitor for invasive issues. Install fish passage to Pool 2b. Spot check gauge level readings.

Management Strategy Constraints: Extreme high lake levels could comprise the Pool2a-2b dike.

Repairs needed: install IGLD staff plate for independent readings.

Unit: **Pool 2b**

Desired water level		Wk #	2013 Date	Actual Water level Staff reading		Notes
old	new			old	new	
			Jan.			
			Feb.			
			Mar.			
		13	Apr.			
			May			
		21				
			June			
			July			
			Aug.			
		35	Sept.			
			Oct.			
			Nov.			
			Dec.			

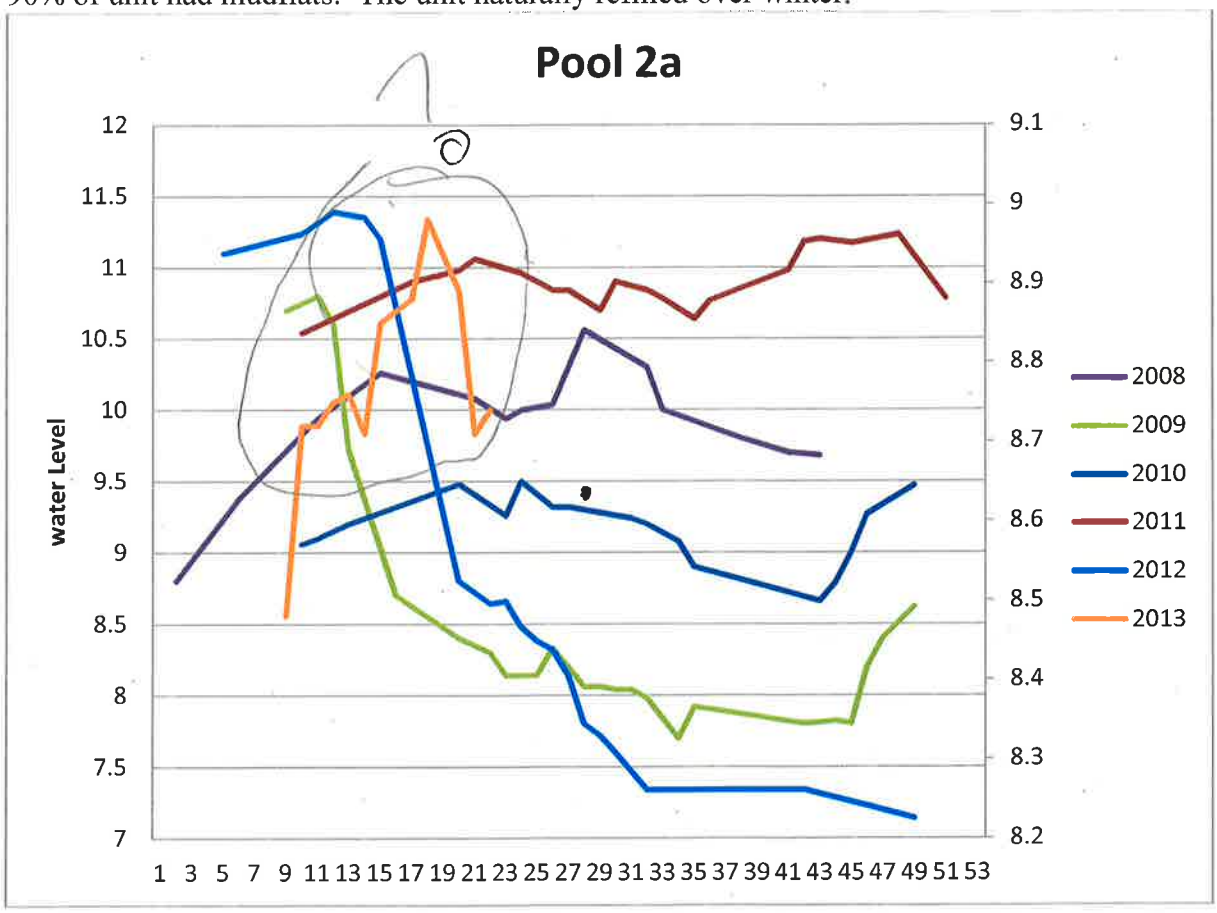
Unit: Pool 2A

Acres: 65

2012 Activity: Unit drawn down for planned installation of fish passage structure to Pool 2c. Project cost prevented installation, will rebid in 2013. May need to drawdown when project is awarded.

2011 notes: Water was significantly higher this year due to rainfall and high water levels. Tried pumping out in late November but tractor broke down.

Draw Down Years: 2012—for planned structure installation. 2009 – April through August managed for mudflats & shorebird use, reflooded in November – excellent shorebird use and good response of nutsedge & nodding smartweed around island; 2007 – Pumped down by May and reflooded in July. Missed April shorebird migration, but excellent knodding smartweed, sedge, & millet response and fall duck use. 2004 – drawn down started late March, but it was August before 90% of unit had mudflats. The unit naturally refilled over winter.



Unit Goals: Attract a variety of waterfowl, water birds, wetland animals and invertebrates to provide opportunities for wildlife viewing.

Objectives: Establish more perennial vegetation. Manage against invasives.
Strategies: Maintain water until fish passage contract is awarded, then dewater as needed. Monitor for invasives.

Management Strategy Constraints: It is difficult to remove high water. Planned pump installation in 2013-14 for water source and drawdown of Pool 2a and MS 8a.

Repairs Needed: Install IGLD staff gauge

- **All gauge reading above 9 need 10 added to gauge reading**

Unit: **Pool 2a -** Majority of mudflats exposed at 7.66

Desired water level		Wk #	2013 Date	Actual Water level Staff reading		Notes
old	new			old	new	
			Jan.			
			Feb.			
			Mar.			
9.5-9.7						
			Apr.			
9.2			May			
		22	28	8.74		
		23	June 6	8.70		
		24	12	8.60		
		25	21	8.62		
		26	26	8.58		
		27	July 1	9.06		
		28	8	9.44		
		29	17	9.34		week 31 07/31 9.40
		30	22	9.48		
		33 7	Aug. 13	~9.3		Columbia blocking
		32 6	8	9.40		
		34	22	8.60		
		35	29	8.64		
		37	Sept. 12	8.75		
		38	19	8.70		
		40	30	8.76		
9.0-9.2		42	Oct. 17	8.78		Keep low for Spring Construction
		43	23	8.78		
		44	29	8.74		
		45	Nov. 7	8.83		
		46	14	8.81		
			Dec.			

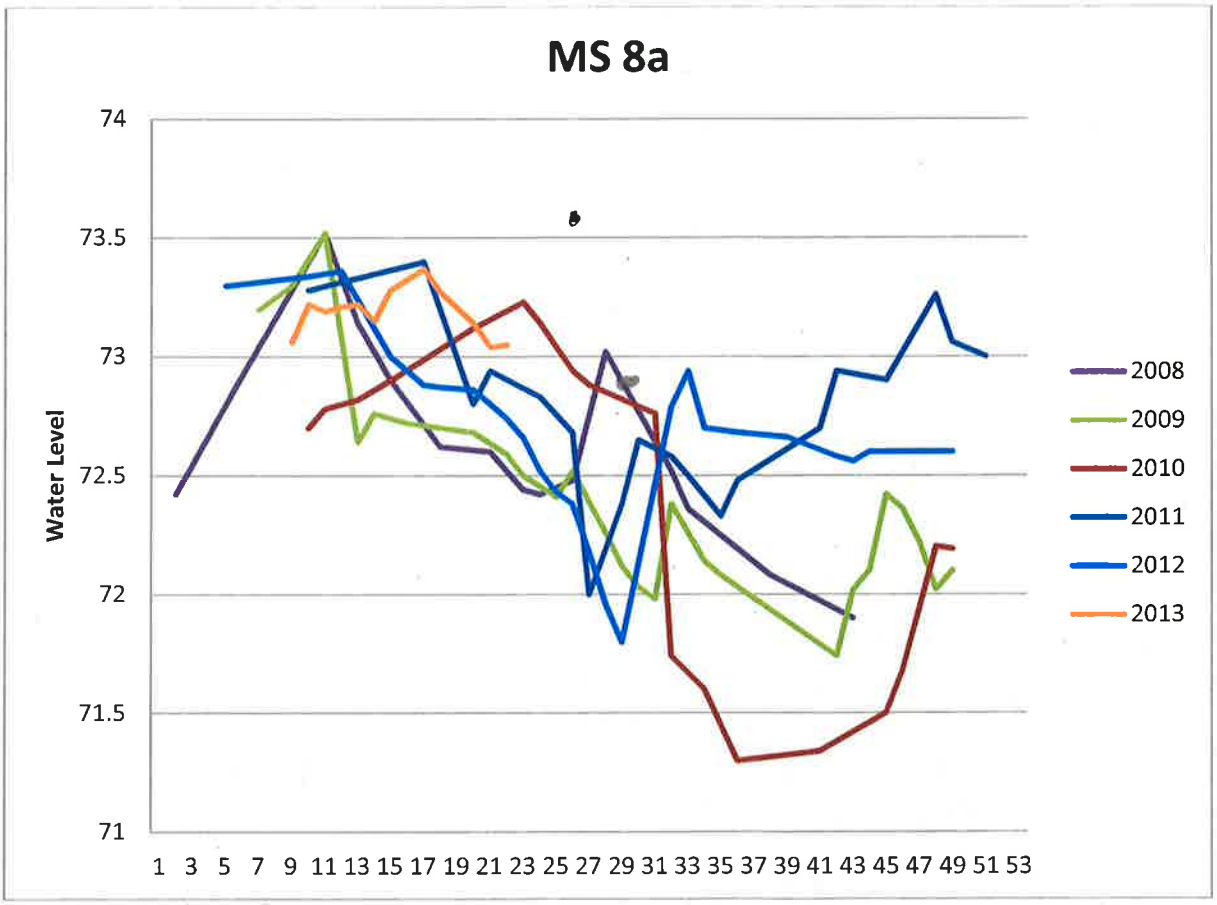
Unit: MSU 8A

Acres: 56

2012 Activity: Maintained levels by pumping as needed, since this was one of the few units with reliable water during the 2012 drought.

2011 notes:Water was high at the beginning of the year in this unit but someone tampered with the structure and opened this unit to 2a which caused the water levels to drop.

Draw Down Years: 2010 –Water taken out of unit in August reflooded in November. 2009 – evapotranspiration resulted in mudflats on east side in August. Periodic pumping and mudflats occurred through mid October; 2004 – drawn down in March. Parts of unit disked. Reflooded in mid-September; 2003 – planted buckwheat and flooded in fall?



Unit Goal: Provide resting and foraging habitat for migratory birds.

Objectives: Encourage marsh vegetation and invertebrates.

Strategies: Keep high water through summer, then evaluate for fall shorebirds.

Management Strategy Constraints: Beaver lodge present on south side

Repairs Needed:

I. South dike is breached to MSLL
II. Catwalk needs raised 12"
III. Redundant screw gate on Pool 2c side has fallen off.

Unit: **MS 8a**

Desired water level			2013 Date	Actual Water level Staff reading		Notes
old	new			old	new	
			Jan.			
			Feb.			
			Mar.			
			Apr.			
1.7						
			May			
		22	28		73.05	
1.5		23	June 6		72.9	
		24	12		72.94	
		25	21		72.87	
		26	26		72.88	
		27	July 1		73.06	
		28	9		73.60	
		29	17		73.06	
		30	22		73.18	week 31 07/31 72.91
		31	Aug. 13		72.80	
		32	9		72.86	
		34	22		72.64	
		35	29		72.66	
		37	Sept. 12		72.71	
		38	19		72.65	
0.8-1.0		42	Oct. 3		72.67	
		43	23		72.66	
		44	29		72.64	
		45	Nov. 7		72.71	
		46	14		72.70	
			Dec.			

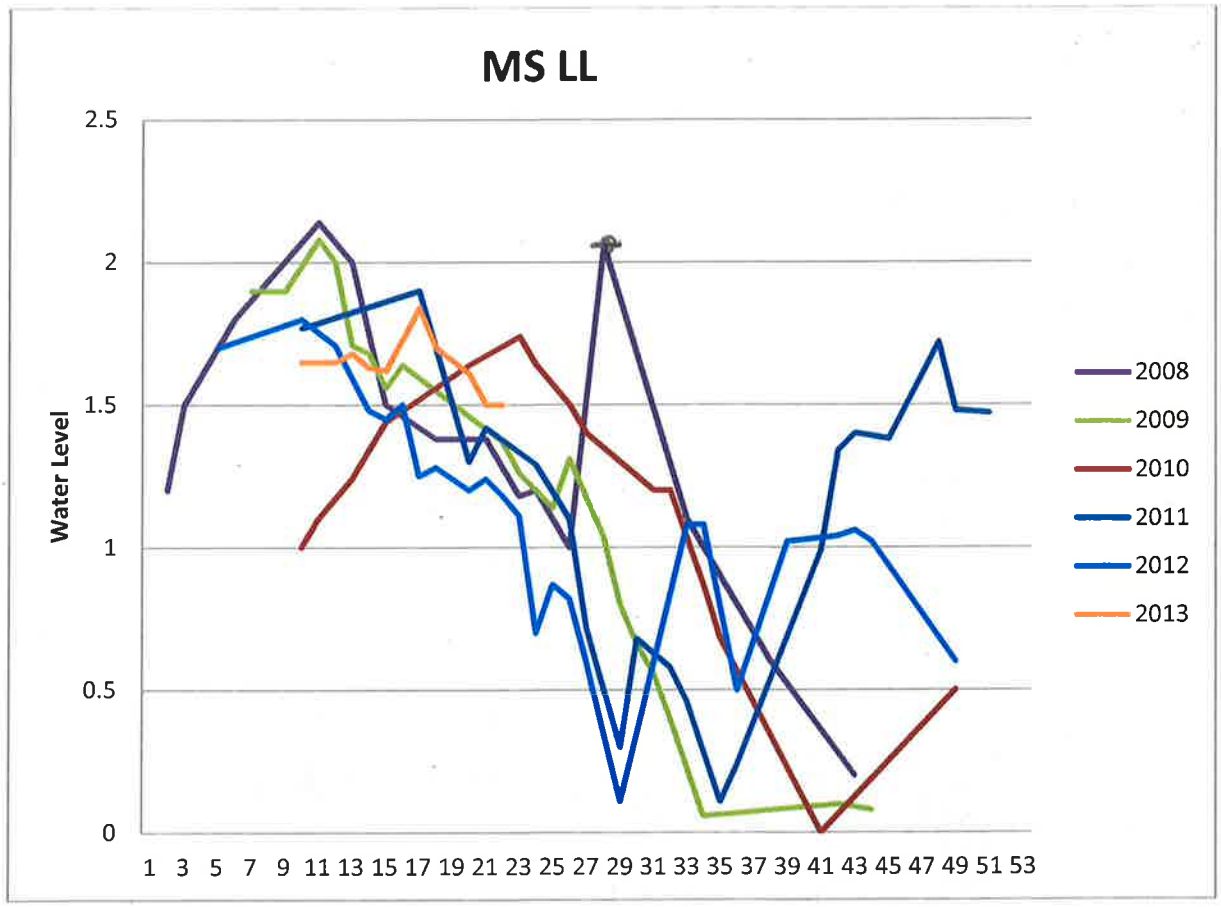
Unit: MSU LL

Acres: 27

2012 Activity: Unit drew down due to drought.

2011 notes: Water levels fluctuated all year because of rain and pumping.

Draw Down Years: 2012-due to drought, 2010- Starting in September water was below boards until December. 2009 – evapotranspiration resulted in late summer draw down (late July and August)



Unit Goal: Maintain unique refuge habitat and native plants. Provide foraging and nesting habitat for migratory birds.

Objectives: Maintain marsh conditions.

Strategies: Allow full pool in spring and evapotranspiration throughout the season. Maintain max level of 1.2-1.3 to prevent woods flooding.

Management Strategy Constraints: Unit floods easily from rains, resulting in dramatic water level changes. Approximately 1.3 unit floods north woods. Possibly plugged outlet pipe to 8a pump box. Beaver activity present. Dike breach limits water management independent of MS 8a.

Repairs Needed:

I. Pipe to WCS is problematic. -current status unknown – works sometimes.
II. Dike breached to MS 8a
III. Install IGLD gauge

Unit: **MS LL** - Possibly, 1.30 is full pool. Higher water backs up into north woods.

Desired water level		Wk #	2013 Date	Actual Water level Staff reading		Notes
old	new			old	new	
			Jan.			
			Feb.			
			Mar.			
1.3						
			Apr.			
1.3						
			May			
1.3		22	28		1.5	
		23	June 6		1.4	
		24	12		1.21	
		25	21		1.33	
		26	26		1.3	
		27	July 1		1.7	
		28	8		2.07	Open Nearly Full, NO apparent water movement woods flooded, 2" on road at culvert 16 1.88
		29	17		1.5	
		30	22		1.64	07/31 week 31 1.37
		33	Aug. 13		1.26	
		32	9		1.32	
		34	22		1.09	
		35	29		1.12	
		37	Sept. 12		1.17	
		38	19		1.10	
		42	Oct. 17		1.14	
		43	23		1.10	
		44	29		1.08	
		45	Nov. 7		1.17	
		46	14		1.17	
			Dec.			

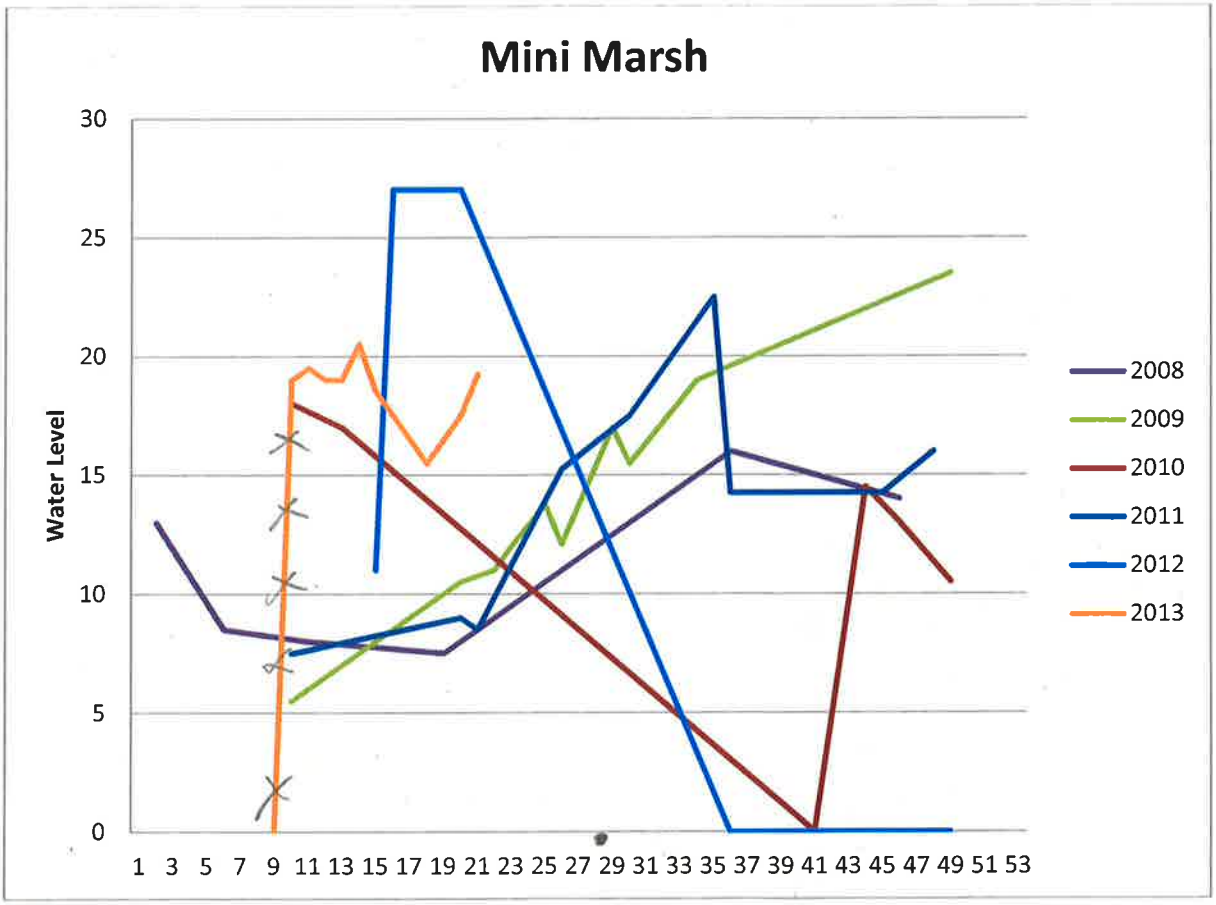
Unit: Mini Marsh

Acres: 30

2012 Activity: Drawn down in spring for spring shorebirds and for spring prescribed burn of dense cattail stand, summer light disk of cattails. Some cottonwood establishment on east side. Limited shorebird use or vegetation response to drawdown.

2011 notes: Mini marsh is used as a holding tank to pump up blind 93 in the fall. During this time water levels fluctuate highly until pumping is finished.

Draw Down Years: 2012-for spring shorebirds and burning of cattail stand



Note: graph is inverted; this is a measure down to water surface.

Unit Goal: Provide resting and foraging habitat for migratory birds.

Objectives: Control cattails, reed canary grass, and cottonwoods.

Strategies: Allow to fill up naturally, pump if needed

Management Strategy Constraints: If water in unit gets much higher than half way up the side of the discharge pipe, water leaks through splitter box to Crane Creek. Needs new flap gate.

Repairs Needed:

I. Raise south dike – borrow from ditch and inside unit. This would allow for deeper water management capabilities and more diversity.

II. Flap gate on pump outlet fallen off and needs replaced, pipe 10" ID, 10 ¾" OD

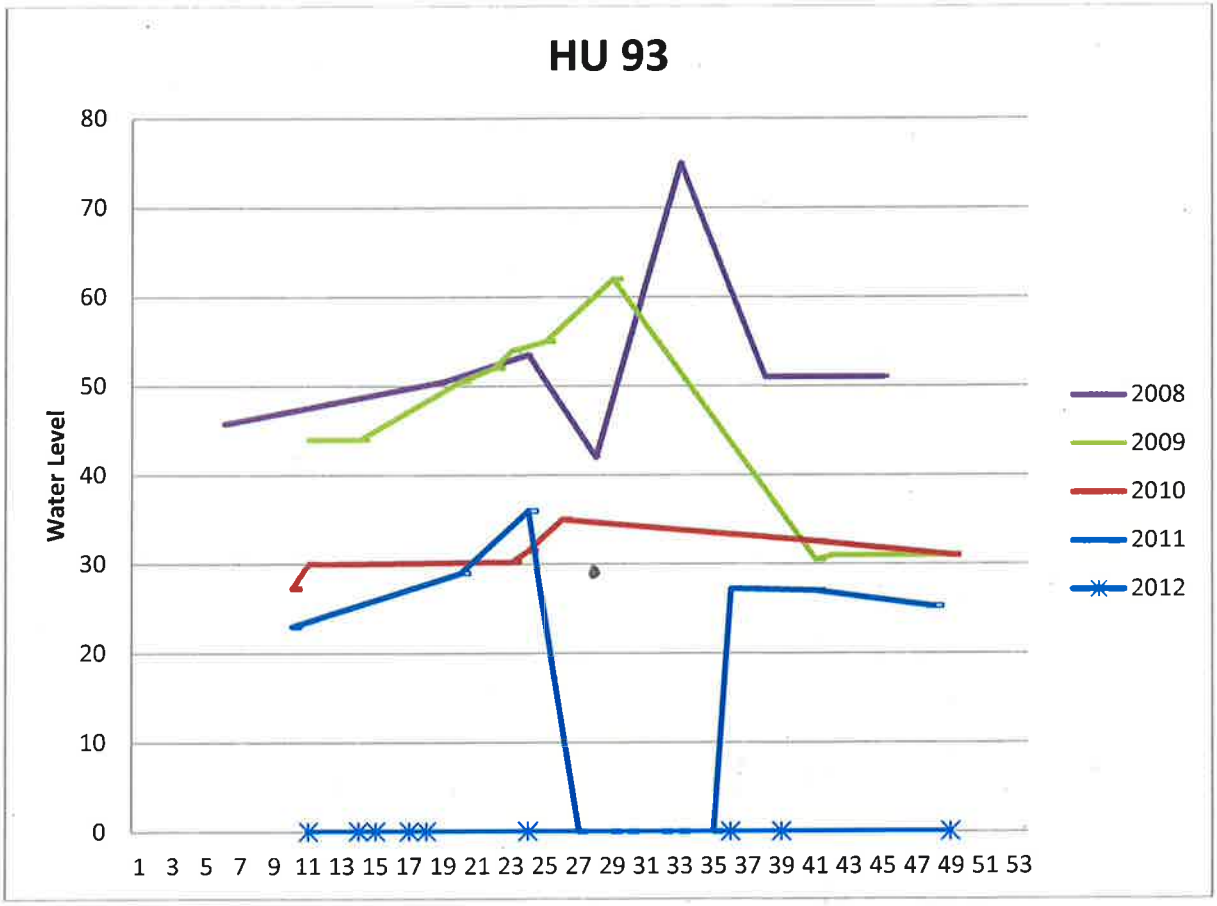
III. Install IGLD gauge

Unit: **Mini Marsh** - Measure from waters surface to top of splitter box.

Desired water level		Wk #	2013 Date	Actual Water level Staff reading		Notes
old	new			old	new	
			Jan.			
			Feb.			
			Mar.			
8"						
			Apr.			
8"						
			May			
			June			
		25	21	10		
		26	26	5		
		27	July 3	1		
		28	8	-3/8"		South Dike OK
		29	17	1.5		week 31
		30	22	1		31 3.5"
		33 11	Aug. 17	6"		
		32 6	9	5"		
		34	22	8.5"		
		35	29	8		
		36	Sept. 3	7"		
		38	16	9 3/4		
		11	19	7"		
		42	Oct. 7	8.5"		
		43	23	9"		
		44	29	9.5"		
				9.25"		
		45	Nov. 8	↓		
10"		46	13	9.5"		
			Dec.			

Unit: Hunt Unit 93

Acres:
2012 Activity: Aerial sprayed for phragmites. Complete drawdown all year due to drought.
2011 Notes: Evapotranspiration resulted in mudflats in mid-July. Unit was reflooded in mid-September with a Thompson Pump and was at good water level for hunt season.
Draw Down Years: 2012-drought, dry all year, 2011- couple dry months before hunt season



Note: graph is inverted; this is a measure down to water surface.

Unit Goal: Provide resting and foraging habitat for migratory birds and provide a quality hunt unit.
Objectives: allow unit to establish good annual plant production.
Strategies: Allow to fill naturally. Will need to monitor for invasives, and possibly take more aggressive measures in management.
1. Evaluate for moist soil management for shorebirds, disk in fall, allow to flood for 2014 spring shorebird habitat.
2. Remove hunts blinds.
Management Strategy Constraints: This unit sits on high ground and flooding is costly & difficult.
Repairs Needed:

I. If this unit is maintained as a wetland, then the west and south dikes are in questionable shape & may degrade quickly with water against them year round. Consider rebuilding for better compaction, tile search, & higher dike tops.
II. Set staff plate

Unit: **HU 93** - From waters surface to top of brace on screw gate. 32" is full pool

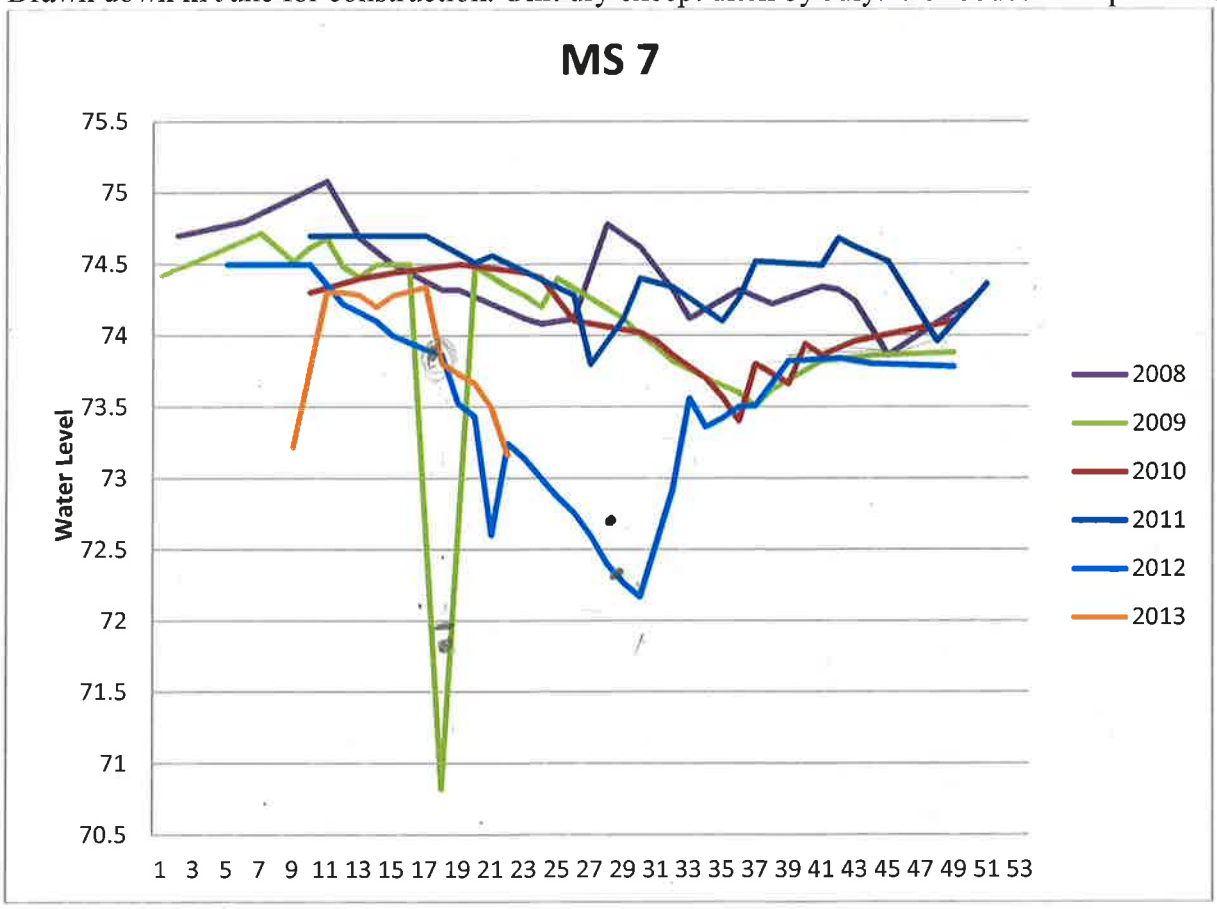
Desired water level		Wk #	2013 Date	Actual Water level Staff reading		Notes
old	new			old	new	
			Jan.			
			Feb.			
			Mar.			
31"						
			Apr.			
			May			
			June			
		25	21	42.5"		
			July			
		28	8	29 1/2		
		33	Aug. 13	32 1/2		
			Sept.			
		43	Oct. 22	23"		
31"						
31"			Nov.			
			Dec.			

Unit: MSU 7

Acres: 94

2012 Activity: Drawdown in May for spring teal/shorebirds. Smashed opening in flowering rush with marshmaster, with no long term reduction. Openings provided some fall waterfowl use. Had to reflood with portable pumps due to gate failure in pump structure.

Draw Down Years: 2012—spring shorebirds/teal, 2007 – previous fall draw down resulted in excellent spring bird use. Evapotranspiration led to saturated soils in June. Unit was flooded in late mid September when pump was replaced; 2006 – A draw down was attempted starting in May, but not achieved until mid July. Invasives were mowed and disked in early august. Unit was reflooded in mid August and managed for mudlflats. Unit was reflooded in September; 2005 – Drawn down in June for construction. Unit dry except ditch by July. Reflooded in September.



Unit Goal: Provide migratory bird foraging and resting habitat. In addition the transitional areas on 7B will allow for easily accessible upland habitat for nesting as well as provide a gradient of water levels.

Objectives: Provide teal/shorebird habitat in spring.

Strategies: Drawdown and heavy disk RCG and Flowering Rush in June. Plant Japanese Millet in disked areas. **Repair unit side pump gate.** MOVE BLIND 72

Management Strategy Constraints: Discharge pipe may leak, unit side gate is broken.

Repairs Needed:

I. Unit side gate in pump box is off track.

II. Krause Rd is too low in the SW corner and needs to be raised to allow to manage against invasives with deeper water levels.

III. Discharge pipe is possibly leaking.

Unit: **MS 7**– 3.14 on old gauge = 73.96 on new staff plate 74.73 – Top of gauge

Desired water level		Wk #	2013 Date	Actual Water level Staff reading		Notes
old	new			old	new	
			Jan.			
			Feb.			
			Mar.			
3.5	74.32					
			Apr.			
3.5	74.32					
			May			
		22	28		73.16	
		24	June 9		72.71	10 72.35 15 72.38
		11	12		72.98	
		25	21		72.58	
		26	26		72.22	
		27	July 1		72.93	
		28	8		73.22	
		29	17		72.37	
		30	22		72.72	week 31 07/31 ≈ 72.12
		33?	Aug. 13		72.08	1971.84 – pumped
		326	9		72.12	
		34	22		71.34	
		35	29			BELOW PLATE
		37	Sept 2			
		40	30		73.34	
		42	Oct. 12		73.87	
3.0	73.82	43	23		73.84	
		44	29		73.80	
		45	Nov. 8		73.88	
		46	13		73.87	
			Dec.			

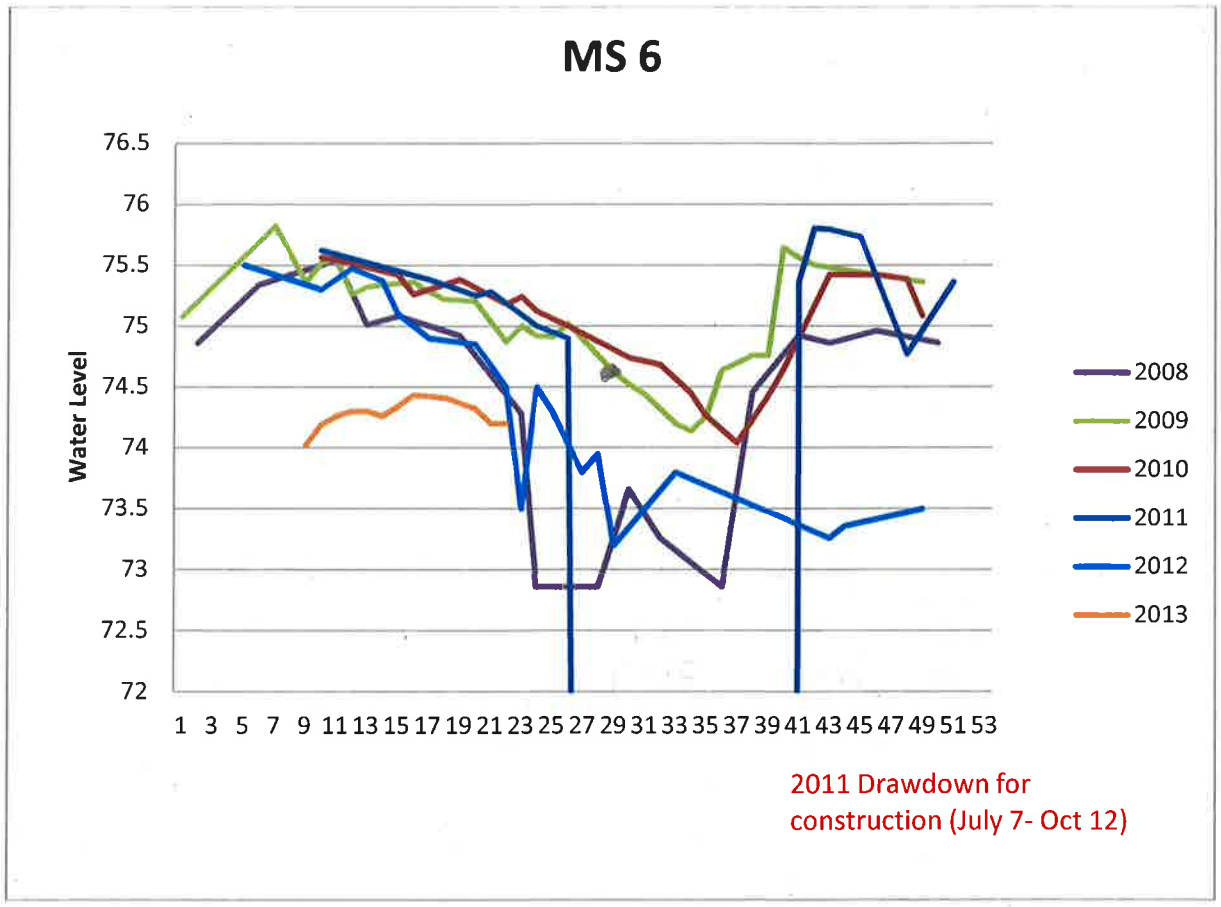
Unit: MS 6

Acres: 70

2012 Activity: Unit dewatered in summer for repair of MS pump discharge gates. Test spaying of American lotus by helicopter in fall.

2011 Notes: Water was taken off unit in July for pipe repair and reflooded in October. We used MS6 to also fill HU6 for hunts. A new staff plate was installed in 2009 to reflect true elevations. 2.54 = 75.40. Old plate was torn out in 2011 now must go by new gauge.

Draw Down Years: 2011- for repairs to structure pipe. 2008 – Drawn down for construction in early June. Reflooded in late July and again in September. 2006 – MS pump structure gate for MS6 leaked water out in early spring. Unit was then managed for mudflats and reflooded in Sept.; 2005 – Evapotranspiration led to mudflats in July. A hole in the north dike was repaired. The unit was reflooded in September.



Unit Goal: Provide foraging and resting habitat for migratory birds as well as brood habitat.

Objectives: Manage for hemimarsh conditions.
Strategies: Maintain full pool. Repair leaks as needed. Evaluate American lotus spray results.

Management Strategy Constraints: see repairs needed

Repairs Needed:
All dikes are in poor shape and need to be rebuilt. Annual patching of muskrat holes is required. Currently partially connected to HU6 by hole through dike.

Unit: **MS 6**

Desired water level		Wk #	2013 Date	Actual Water level Staff reading	Notes
old	new			new	
			Jan.		
			Feb.		
2.4	75.26		Mar.		
			Apr.		
			May 8		
		22	28	74.20	
		23	June 6	74.06	
		24	12	74.08	
		25	21	74.02	
		26	26	73.98	
		27	July 3	74.44	
1.5	74.36	28	10	74.63	
		29	17	74.52	
		30	22	74.61	week 31 07/31 74.59
		33	Aug. 13	74.46	
		32	9	74.54	
		34	22	74.28	
		35	29	74.30	
		36	Sept. 3	74.50	
		37	12	74.38	
1.5	74.36	38	19	74.30	
		39	27	74.40	
		40	30	74.40	
		42	Oct. 17	74.35	
		43	23	74.32	
		44	29	74.27	Take high water off before ice up
		45	Nov. 8	74.36	
		46	13	74.37	
			Dec.		

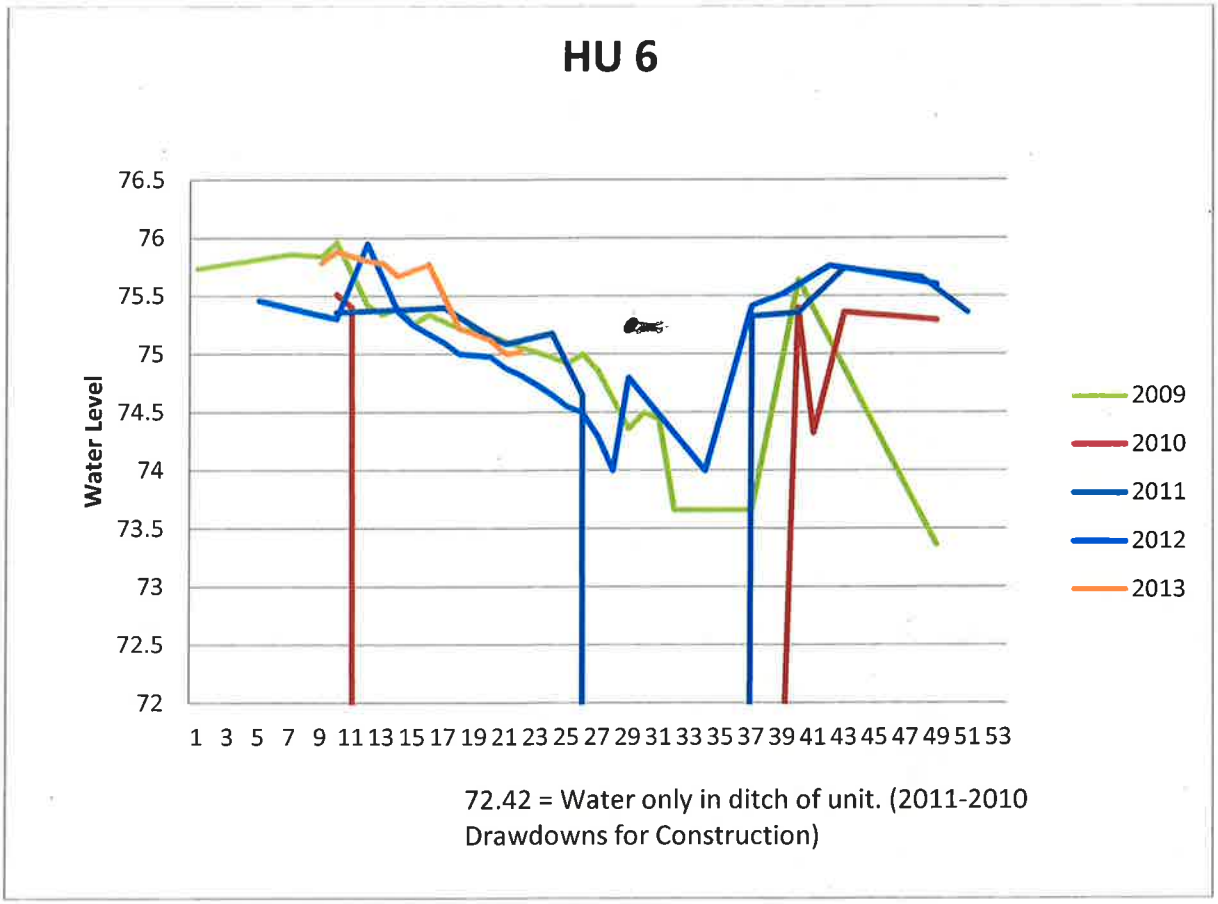
Unit: Hunt Unit 6

Acres:

2012 Activity: Summer drawdown, mowed cattails and cottonwoods in about 40% of unit. Fall reflood.

2011 Notes: Mosaic of cattails mowed prior to fall flooding for waterfowl use areas. Opened for shorebird use in April and was completely drawn down in July until September reflooded through MS6 and MS ditch. North and west dikes were rebuilt.

Draw Down: 2012, cattail and cottonwood control. 2010 & 2011- for construction.



Unit Goal: Provide foraging and resting habitat for migratory birds as well as provide a quality hunting area.

Objectives: Manage for good annual plant production and establishment of some perennial vegetation. Use muskrats to decrease cattails. Spring shorebird habitat in rotation.

Strategies: Maintain near full pool water levels.

Management Strategy Constraints: Common dike with MS6 and dike along County Line road are in poor shape, and limit maximum pool.

Repairs Needed:

Unit: **HU 6** - Full pool 75.40? HU 6 is suitable for fall waterfowl when the unit is equalized with MS6 at 75.40 or 2.54 according to the old gauge.

Desired water level	Wk #	2013 Date	Actual Water level Staff reading	Notes
		Jan.		
		Mar.		
		Apr.		
		May		
	22	28	74.26	
	23	June 6	74.06	
	24	12	74.08	
	25	21	74.02	
	26	26	73.98	
	27	July 3	74.44	
	28	10	75.56	
	29	17	78.22	
	30	22	75.35	week 31 07/31 75.30
	33	Aug. 13	75.16	
	32	9	75.24	
	34	22	75.05	
	35	29	75.08	
	36	Sept. 3	75.23	Heavy storms Friday night
	37	12	75.14	
	39	27	75.52	
	40	30	75.52	
75.40?	42	Oct. 17	75.51	
	43	23	75.48	
	44	29	75.46	
	45	Nov 8	75.52	
	46	13	75.52	

Unit: MS 2 North

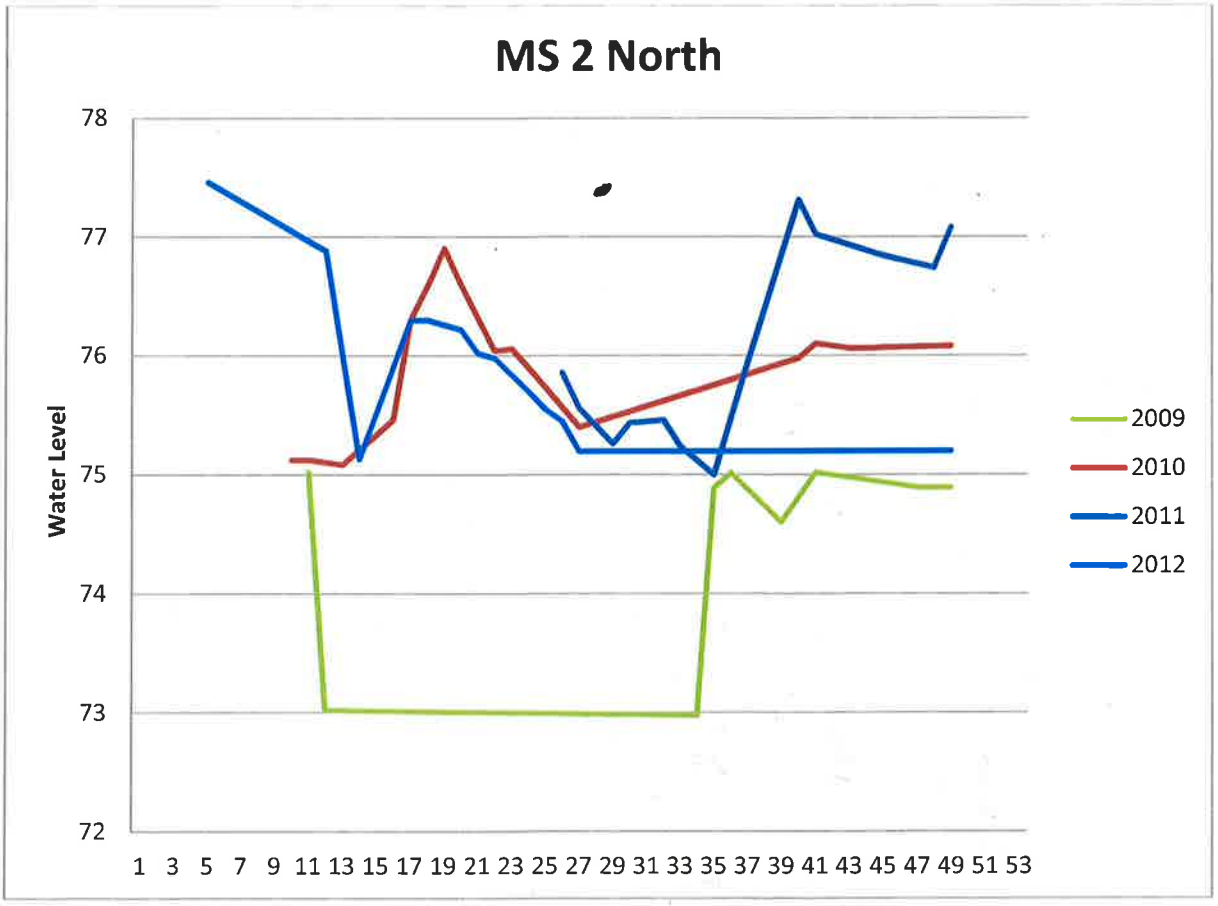
Acres:

2012 Activity: Unit drawn down in summer for raising of all unit dikes and patching of muskrat holes. Was not possible to reflood unit in Fall due to low lake level conditions.

2011 Notes: Water was pumped into the unit in end of August through late September. At 77.46 there is water though the whole unit and about a foot of water in the middle. Good trapping depth.

Draw Down Years: 2012-dike repair, 2011-vegetation establishment, 2009 – March through mid August.

Unit Not IGLD CF -1.24'



Unit Goal: Provide foraging and resting habitat for migratory birds as well as provide a quality hunting area.

Objectives: Manage for good annual plant production and establishment of some perennial vegetation.

Strategies: Early spring drawdown for prescribed fire. Spray RCG with marsh master, spot treat in Fall, monitor for invasive start, especially purple loosestrife. Reflood as soon as possible and maintain full pool.

Management Strategy Constraints: Determine new desired full pool.

Repairs Needed:

CF to IGLD − 1.24'

Unit: MS2 North

Desired water level	Wk #	2013 Date	Actual Water level Staff reading	Notes
		Jan.		
		Mar.		
76-77		Apr.		
		May		
76.0		June		
	28	July 10	77.49	
	29	17	77.35	
	33 7	Aug. 13	77.26	IGLD 76.02
	32 6	9	77.30	
	34	~~22~~ 29	~~77.04~~ 77.10	
	35		77.14	
	36	Sept. 6	77.28	
	37	12	77.26	1677.22−1.24=75.98
	38	19	77.20	
	39	27	77.28	
	40	30	77.27	
77-77.5	42	Oct. 17	77.25	77.25
	43	23	77.26	
	44	29	77.20	
	45	Nov 3	77.28	
	46	13	77.28	

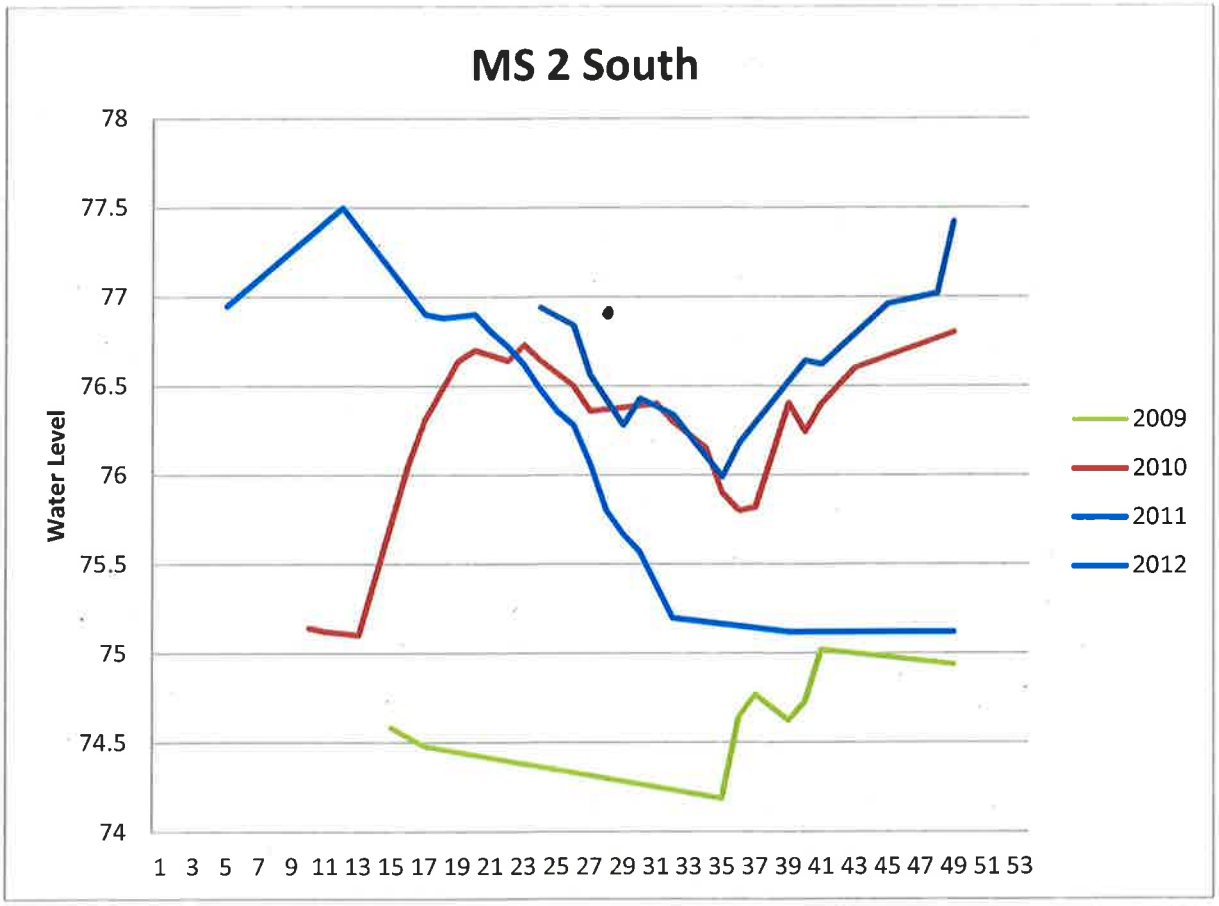
Unit: MS 2 South

Acres:

2012 Activity: Unit drawn down in summer for raising of all unit dikes and patching of muskrat holes. Pump ditch dikes raised, pump repaired, electrical with floats installed. Was not possible to reflood unit in Fall because of pump issues.

2011 Notes: Water level was consistent with 2010 levels. In 2010 we tried to put water in unit though MS ditch but were unable to do so because ditch wasn't high enough. The west half of the unit that is higher had lots of annual grass germination (foxtail, timothy, panic grass) and no real problem species.

Draw Down Years: 2012-raise dike levels, 2009 – March through mid August.



Unit Goal: Provide foraging and resting habitat for migratory birds as well as provide a quality hunting area.

Objectives: Manage for good annual plant production and establishment of some perennial vegetation.

Strategies: Early spring drawdown for prescribed fire. Spray RCG with marsh master, spot treat in Fall, monitor for invasive start, especially purple loosestrife. Reflood as soon as possible and maintain full pool.

Management Strategy Constraints: Determine desired full pool.

Repairs Needed:

CF to IGLD −1.24'

Unit: **MS 2 South**

Desired water level	Wk #	2013 Date	Actual Water level Staff reading	Notes
		Mar.		
76.0				
		Apr.		
76.0		May		
		June		
	28	July 10	76.85	
	29	17	76.72	
				Target 77
	33?	Aug. 13	76.64	IGLD 75.40 Target = 75.75
	32?	9	76.68	19 76.86 - pumping
	34	22	77.04	
	35	29	77.06	
	36	Sept. 6	77.18	
	37	12	77.16	week 40
	39	27	77.23	9/30 77.23
76.9-77	42	Oct. 11	77.21	
	43	23	77.20	
	44	29	77.17	
	45	Nov. 8	77.24	
	46	13	77.23	

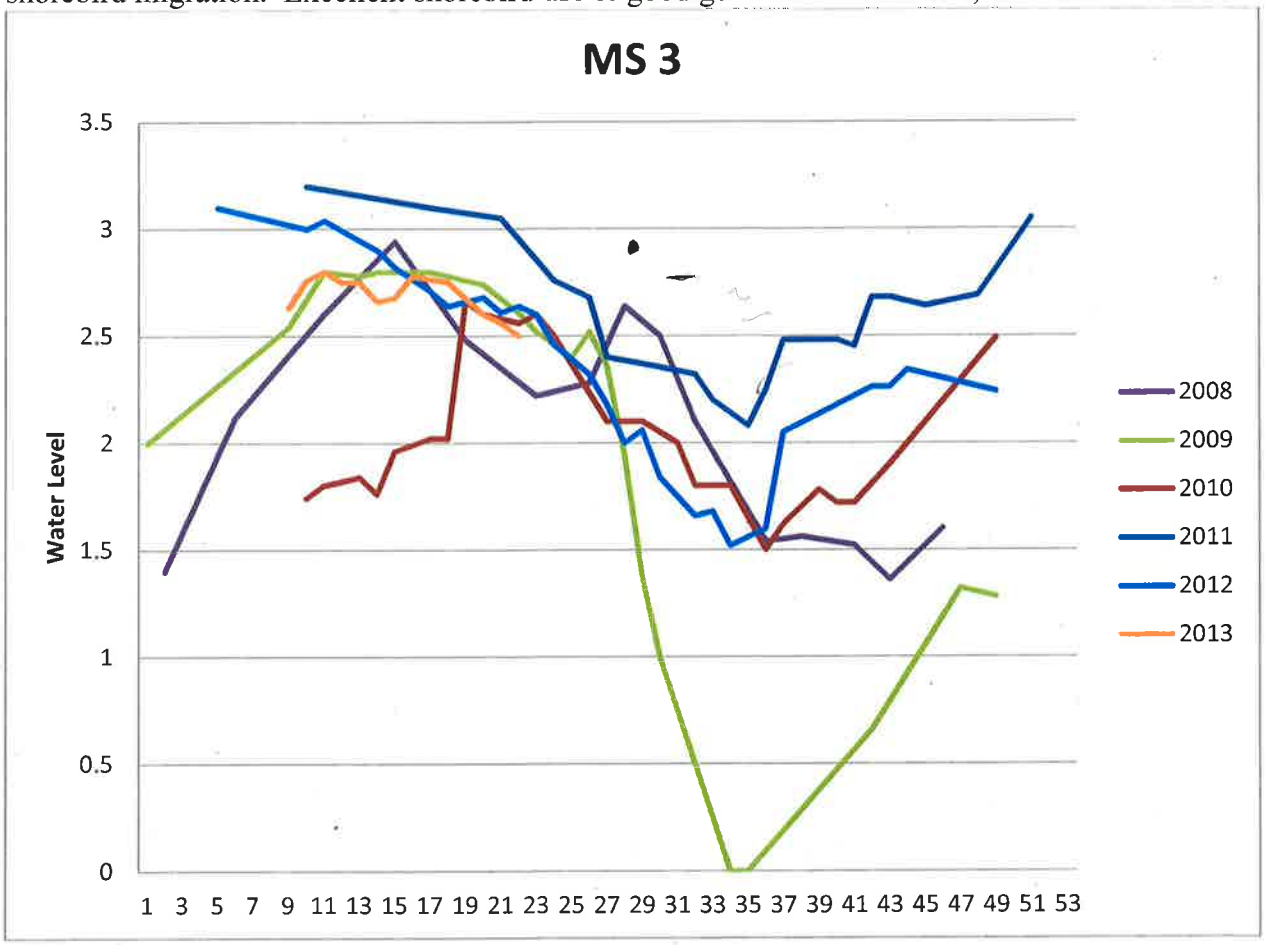
Unit: MSU 3

Acres: 225

2012 Activity: Water in unit all year. Drought did cause lower water levels summer-fall. Flowering rush aerial sprayed in fall, south and east side.

2011 Notes: Water was high most of 2011 because ditch was so high all year from MS4 structure being broke and leaking into the ditch. We needed to add one board to the structure in September because water was flowing into the unit from pumping up the ditch.

Draw Down Years: 2009 – drawn down July 13 through October 21 for construction & fall shorebird migration. Excellent shorebird use & good germination of millet, but too late to flower.



*2007 – early in year gauge moved.

Unit Goal: Provide a nesting and feeding area for migratory birds as well as brood habitat.

Objectives: Maintain as hemi marsh. Provide emergent and submergent marsh habitat for waterfowl, swans, and rails.

Strategies: Maintain full pool. If west and south dike work is able to be completed, draw down just before construction. Evaluate effectiveness of flowering rush spraying.

Management Strategy Constraints: Deteriorating west dike, breaches to west likely within next few years if full pool is maintained.

Repairs Needed:

I. West dike rapidly deteriorating, needs major repair
II. Reslope south dike.
III. Stop logs need additional screws, are installed backwards
IV. Set IGLD staff plate

Unit: **MS 3**

Desired water level		Wk #	2013 Date	Actual Water level Staff reading	Notes
old	new			new	
			Jan.		
			Feb.		
			Mar.		
2.5					
			Apr.		
			May		
		22	28	2.5	
		23	June 6	2.4	
		24	12	2.41	
		25	21	2.36	
		26	26	2.35	
		27	July 1	2.69	
		28	10	2.90	
		29	17	2.78	
		30	22	2.88	week 31 07/31 2.85
		34	Aug 22	2.61	
		35	29	2.65	
		36	Sept. 3	2.84	
		37	12	2.77	
		38	19	2.70	
2.3		40	30	2.78	
		42	Oct. 14	2.74	
		43	23	2.77	
		44	29	2.70	
		45	Nov. 7	2.79	
		46	13	2.77	
			Dec.		

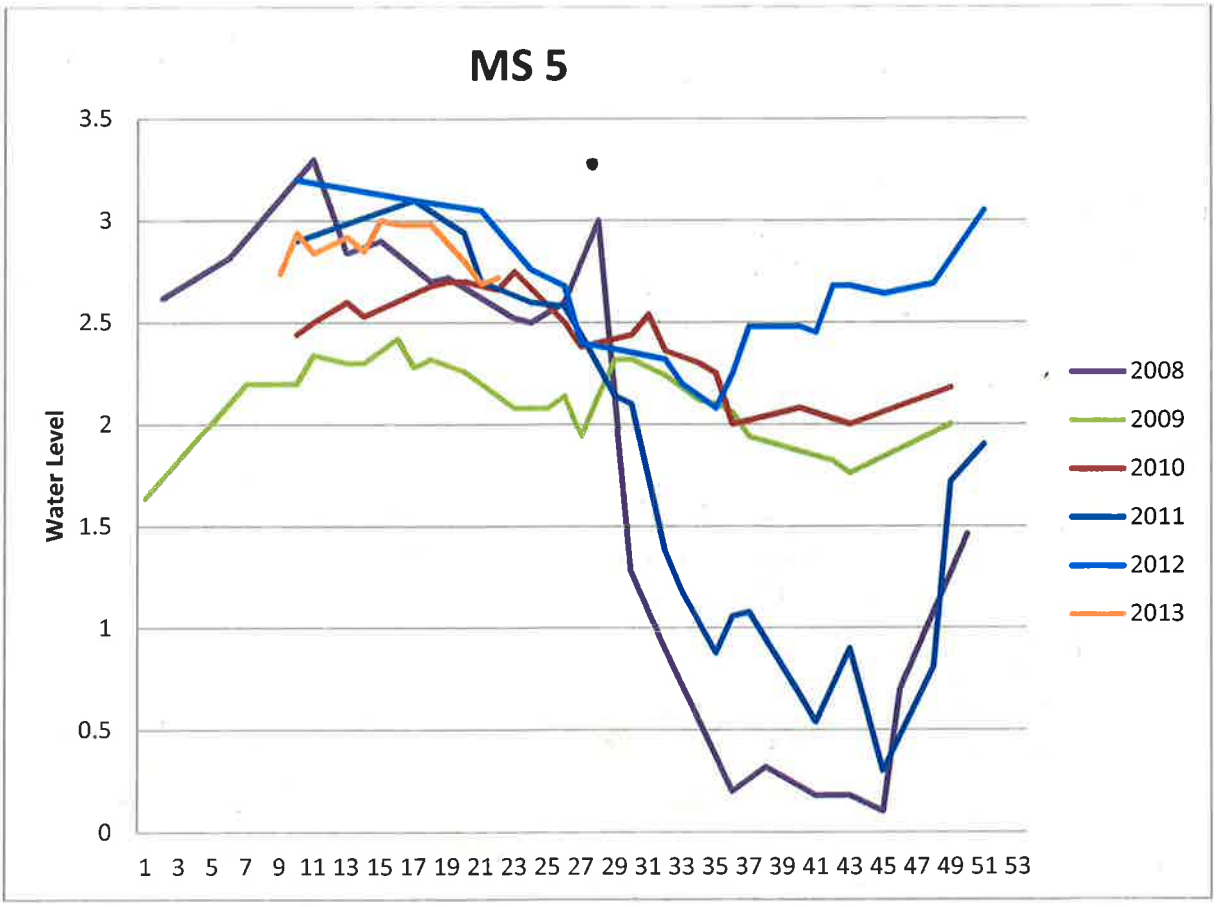
Unit: MSU 5

Acres: 256

2012 Activity: Water in unit all year. Added water in August due to excessive water loss during drought. Test plots for aerial spraying of flowering rush and American lotus in fall. Spot treating of purple loosestrife.

2011 Notes: Water was drawn down for shorebird habitat in September and remained low until December. Thompson pump was used in the NE corner of the unit to draw water down to the maximum capacity, lots of good shorebird use in these months.

Draw Down Years: 2011- Draw down in September for shorebird use put water back in the unit in December. 2008 – drawn down in early July and dry on the west side by August 1 for construction on west dike. Excellent shorebird use on eastern half of unit. Reflooded in early November; 2005- Drawn down in mid-March and reflooded in September when able (low lake levels were a problem for pumping)



Unit Goal: Provide a resting and feeding area for migratory birds.

Objectives: Manage for hemimarsh conditions and prevent further establishment of Purple Loosestrife.

Strategies: Maintain full pool. Monitor for purple loosestrife. Evaluate effectiveness of aerial spraying for American lotus and flowering rush.

Management Strategy Constraints:

Repairs Needed: Set IGLD staff plate

Unit: **MS 5**

MS 5 Conection + 571.13 to gauge reading

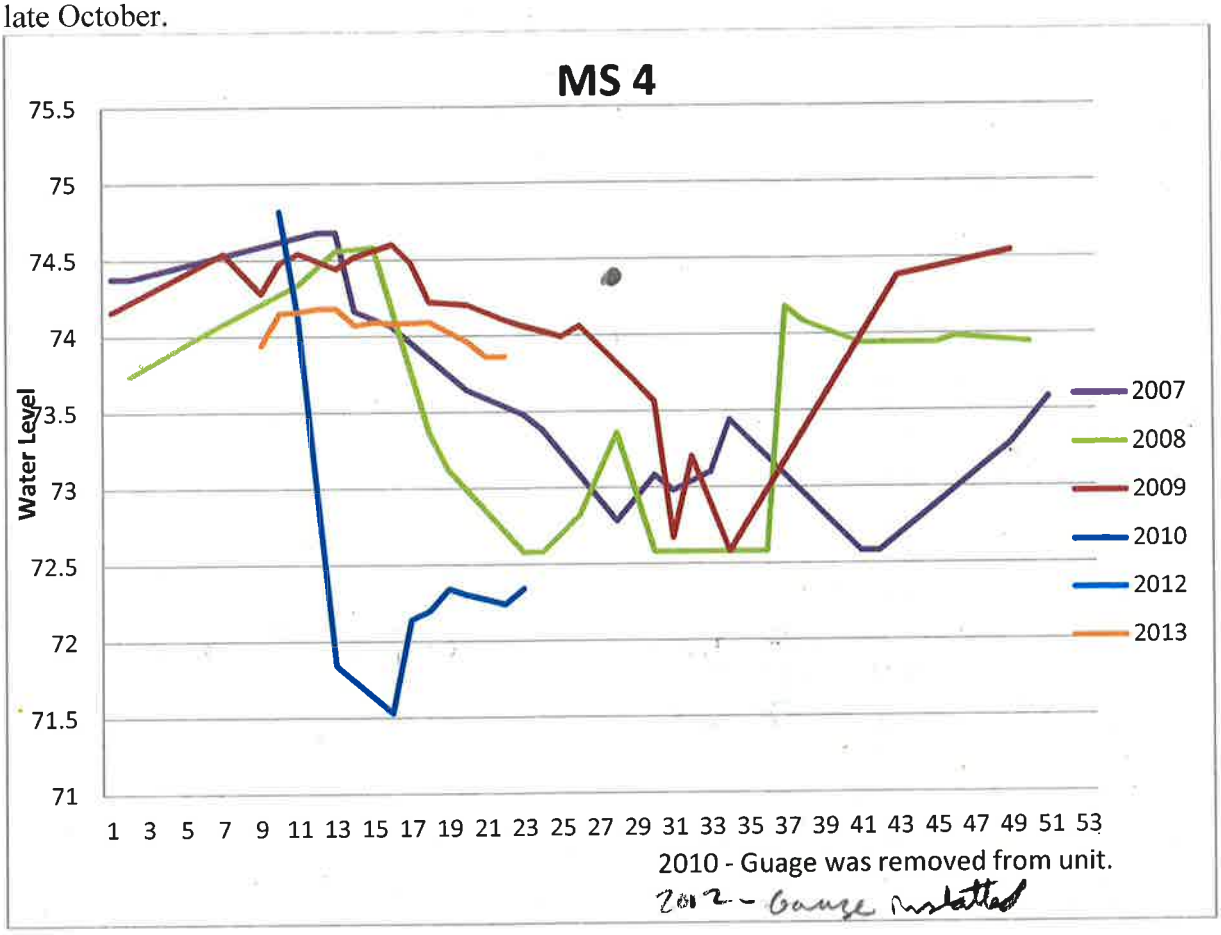
Desired water level		Wk #	2013 Date	Actual Water level Staff reading	Notes
old	new			new	
			Jan.		
			Feb.		
			Mar.		
2.5-2.7					
			Apr.		
2.5			May		
		22	28	2.72	
		23	June 6	2.60	
		24	12	2.64	
		25	21	2.58	
		26	26	2.56	
		27	July 1	3.05	
		28	10	3.26	
		29	17	3.17	
		30	22	3.27	week 31 0713 3.26 = 574.27
		33	Aug. 13	3.14	
		34	22	2.92	
		35	29	2.98	
					Mid Sept - partial drawdown
		36	Sept. 3	3.16	6th 3.13 Open to Vale Ditch 2½", closed to MS did
		37	6		10 2.99 - Open to 5" at Dam 11 2.88 at 4pm 0.09/24hrs = 10 days to 2.0
Shorebird	572.0				12 730 Open To 15" 2.84 2.81 @ 1115
		40	30	1.28	closed at 310
2.0-2.2		42	Oct. 14	1.21	10/24 open 2½"
		44	28	1.12	
		43	23	1.23	
		44	29	1.10	1.10
		45	Nov. 7	0.97	418 1.05
		46	13	1.02	
			Dec.		

Unit: MSU 4

Acres: 112

2012 Activity: Drawn down to attempt repairs on agridrain, and to reslope south dike. Openings mowed in cattails, and phrag patches mowed. Staff plate set in October, no readings in 2012. 2011 notes: The water control structure has replaced in 2010 but blew out in August while trying to fix a leak. Structure will need replaced this upcoming year and staff gauge will need replaced. Extensive amounts of flowering rush and Phrag in this unit.

Draw Down Years: 2012-structure repairs and south dike resloping, 2009 – leaking structure resulted in a draw down in July through late October. 2008 – Vandalism of the NE screw/flap gate drew water levels down in early April. The unit was then managed for spring shorebird habitat, and reflooded in early September. Excellent shorebird use and millet germination. 2007 – Evapotranspiration resulted in a partial drawdown in July and again in September through November. 2004 – Drawn down in April for shorebirds and to encourage aquatic veg, reflooded in late October.



Unit Goal: Provide a nesting and feeding area for migratory birds as well as brood habitat.

Objectives: Repair east dike/road.

Strategies: Maintain moderate water levels in unit until grass establishes on south dike resloping. Flood to maximum pool when possible. Spray reed canary grass spring and fall with marshmaster. Evaluate for aerial spraying of flowering rush and phrag

Management Strategy Constraints: Invasives are an issues, and possibly compromised agridrain structure. Need to maintain full pool for a least a couple of years.

Repairs Needed: Evaluate functioning of agridrain. It appears to still be leaking with reinforced boards. May need to remove and reinstall/replace in correct orientation.

Unit: **MS 4** 72.88- water only in ditch and low areas on north side. 73.98 required to have water across whole unit (2" on high ground of west side)

Desired water level		2013 Date	Actual Water level Staff reading	Notes
		Jan.		
		Feb.		
		Mar.		
		Apr.		
		May		
	22	28	73.8C	
75.0	23	June 6	73.80	
	24	12	73.74	
	25	21	73.68	
	26	26	73.64	
	27	July 1	74.07	
	28	16	74.30	
	29	17	74.20	
	30	22	74.31	week 31 07/31 74.29
	33	Aug. 13	574.18	
	34	22	74.04	
	35	29	74.07	
	37	Sept. 12	74.21	
	40	30	74.38	
74.38	42	Oct. 7	74.38	
	43	23	74.38	
	44	29	74.34	
	45	Nov. 5	74.41	
	46	13	74.41	
		Dec.		

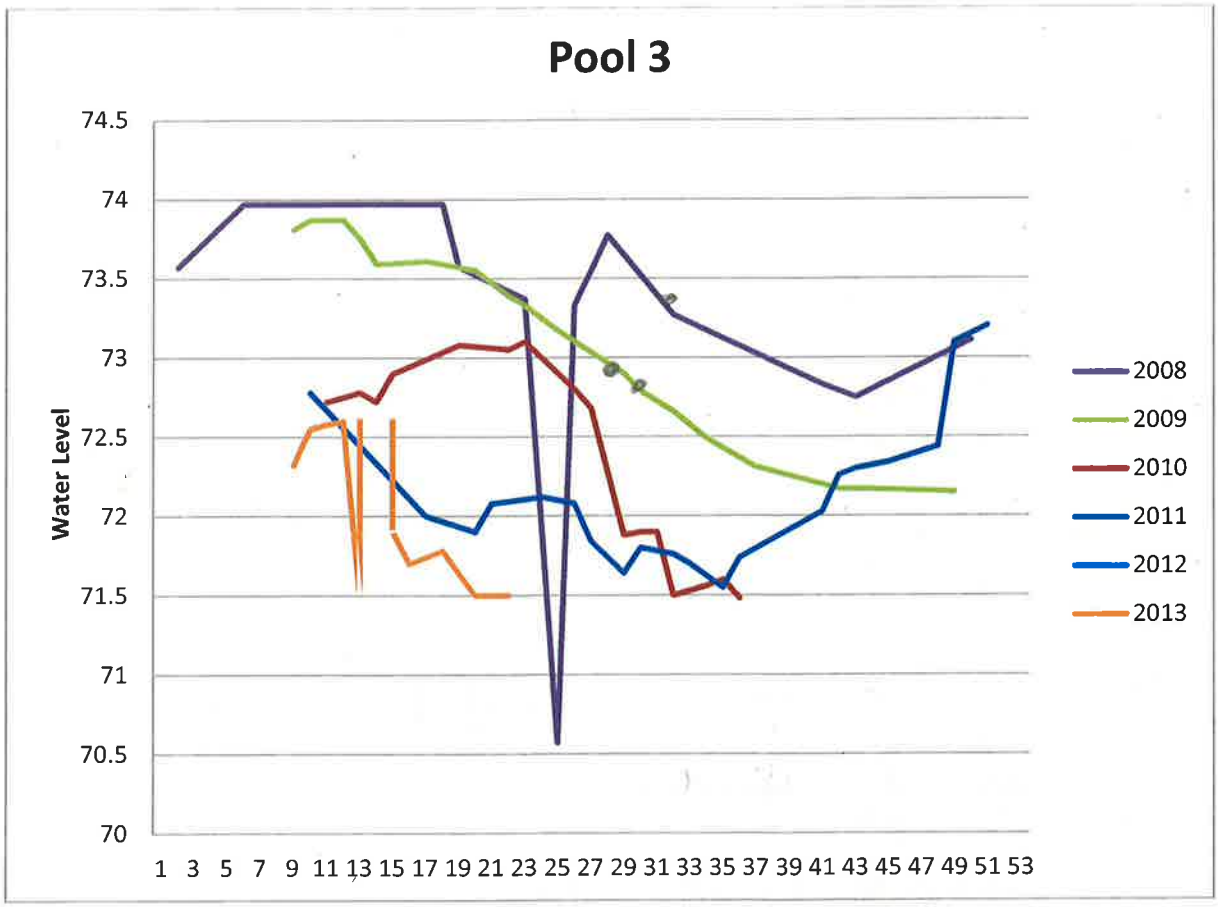
Unit: Pool 3

Acres: 240

2012 Activity: Unit dewatered over the year due to drought, lake levels too low to add water. Planned fall burn did not occur.

2011 notes: Tried to keep water lower in this unit for possible burn this year but because of rain and high lake levels it was hard to keep unit dry. A new staff plate was installed 2010. 72.2 = 1.63. (72.2=572.2ft)

Draw Down Years: 2012-drought, 2010 – Drawdown from October till current. 2009 – Evapotranspiration resulted in low water levels, with water only on eastern half in mid August.



Unit Goals: The primary objective of this unit is to provide food resources and resting cover for migratory waterfowl, waterbirds, nesting Bald Eagles and other wetland animals. In addition water levels are managed to encourage native wetland plants and discourage exotic invasive species.

Objectives: Manage for hemi marsh conditions.

Strategies: Burn unit in spring. Mow and disk cattail regrowth in June on west end. Reflood to full pool as soon as possible. Set structure to capture water. Monitor for invasive start due to repeated drawdowns.

Management Strategy Constraints: Lack of water supply during below average lake levels.
Repairs Needed: Possibly need pipe in structure looked at holes are developing

Unit: **Pool 3 -** (72.2=1.63)

Desired water level	Wk #	2013 Date	Actual Water level Staff reading	Notes
		Jan.		
		Feb.		
		Mar.		
73.87 -				
74.17		Apr.		
		May		
	22	28	DRY	
		June		
	24	12	71.79	
	25	21	71.76	20 gallons fuel
	26	26		per 8hrs
	27	July 1	72.88	
	28	10	72.90	
	29	17	72.68	25 72.76 – start wet pumping 25, 26
	30	22	72.93	week 31 07/31 ~73.00 195 gal used
	32	Aug. 6	73.24	930am since start to Aug 6 morning
	33	13	73.42	
	34	21	~73.30	
	35	29	73.27	
	37	Sept. 12	73.47	16 73.42
	38	19	73.38	
	40	30	73.68	
	42	Oct. 17	73.64	
72.67	43	23	73.60	
	44	29	73.60	
	45	Nov. 8	73.66	
72.67	46	13	73.65	
		Dec.		

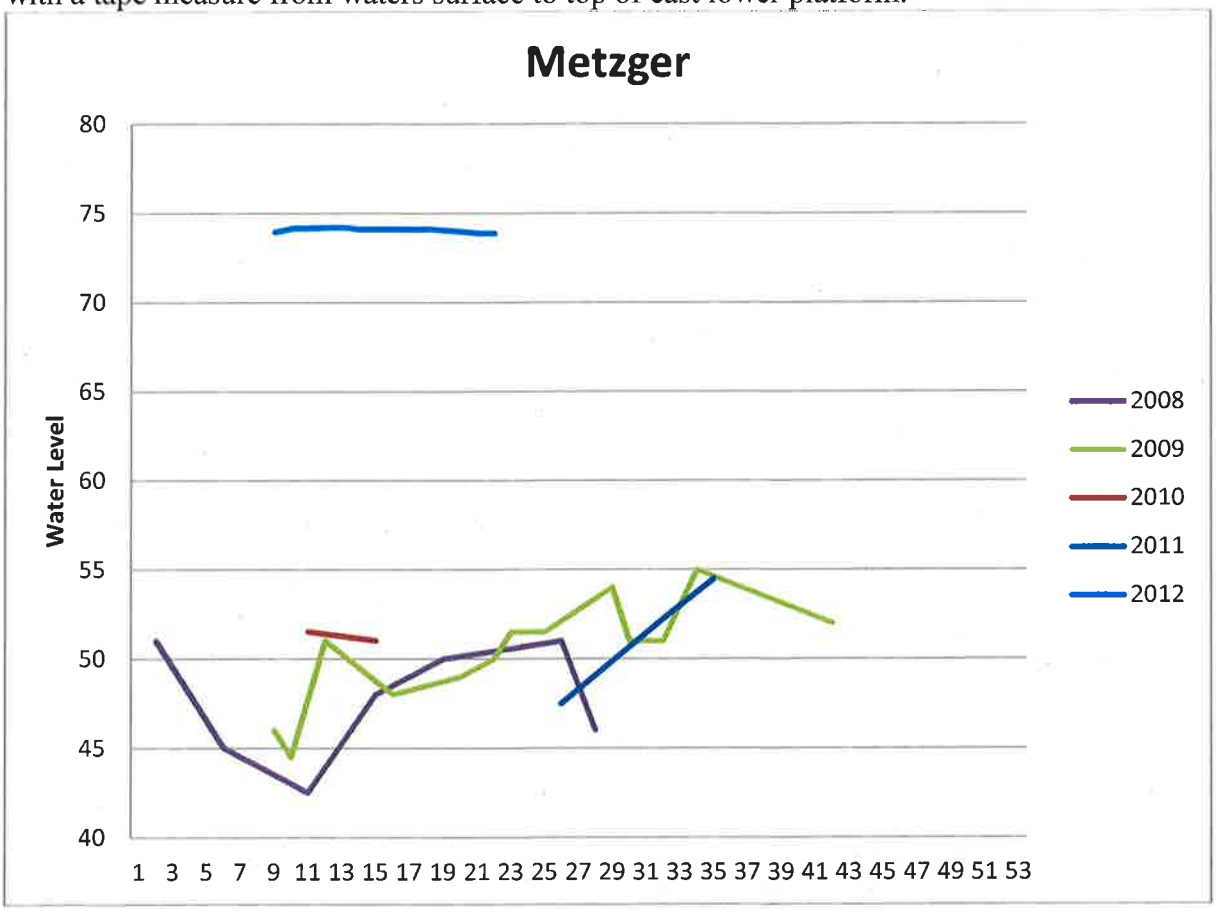
Unit: Metzger Marsh

Acres:

2012 Activity: Marsh maintained water during year. Pumped when possible in fall, limited by silting in of intake. N/A for 2010 /2011

Draw Down Years: 2007 – Drawn down by mid May and reflooded in September; 2004 – Drawn down mid-May and reflooded early August.

For chart, remember high water number readings, mean lower water levels. Water is measured with a tape measure from waters surface to top of east lower platform.



Note: graph is inverted; this is a measure down to water surface.

Unit Goal: Manage in conjunction with ODOW. Refuge 1/3 of marsh is mostly deeper water. Manage water levels for optimum wildlife use on state side. During suitable Lake Erie water level years, encourage opening of structure to lake for fish passage and water quality benefits.

Objectives: Manage water levels for optimum wildlife use on state side. Primary considerations are to provide quality recreational use, especially fishing and waterfowl hunting. Refuge portion of marsh is primarily suitable for fishing, with some waterfowl hunting opportunities on south and west portions.

Strategies: Maintain water until water level management capability is restored by dredging intake, then evaluate for spring 2014 drawdown.

Management Strategy Constraints: DOW waterfowl hunt needs. Entire area is open to the public for recreational use. Intake to structure from lake is 100% silted in, to approximately 4' deep (to top of WCS gates).

Repairs Needed: Dredge intake to restore water supply. Install IGLD staff guage.

Note: Gauge on outside of pump structure 3 full pool – 24" avg, 6" on back, 7'+Deep

Unit: **Metzger Marsh** - Measure from waters surface to top of lower platform on unit side. Maintain full pool for control of invasives. Correction factor 569.02 + gauge

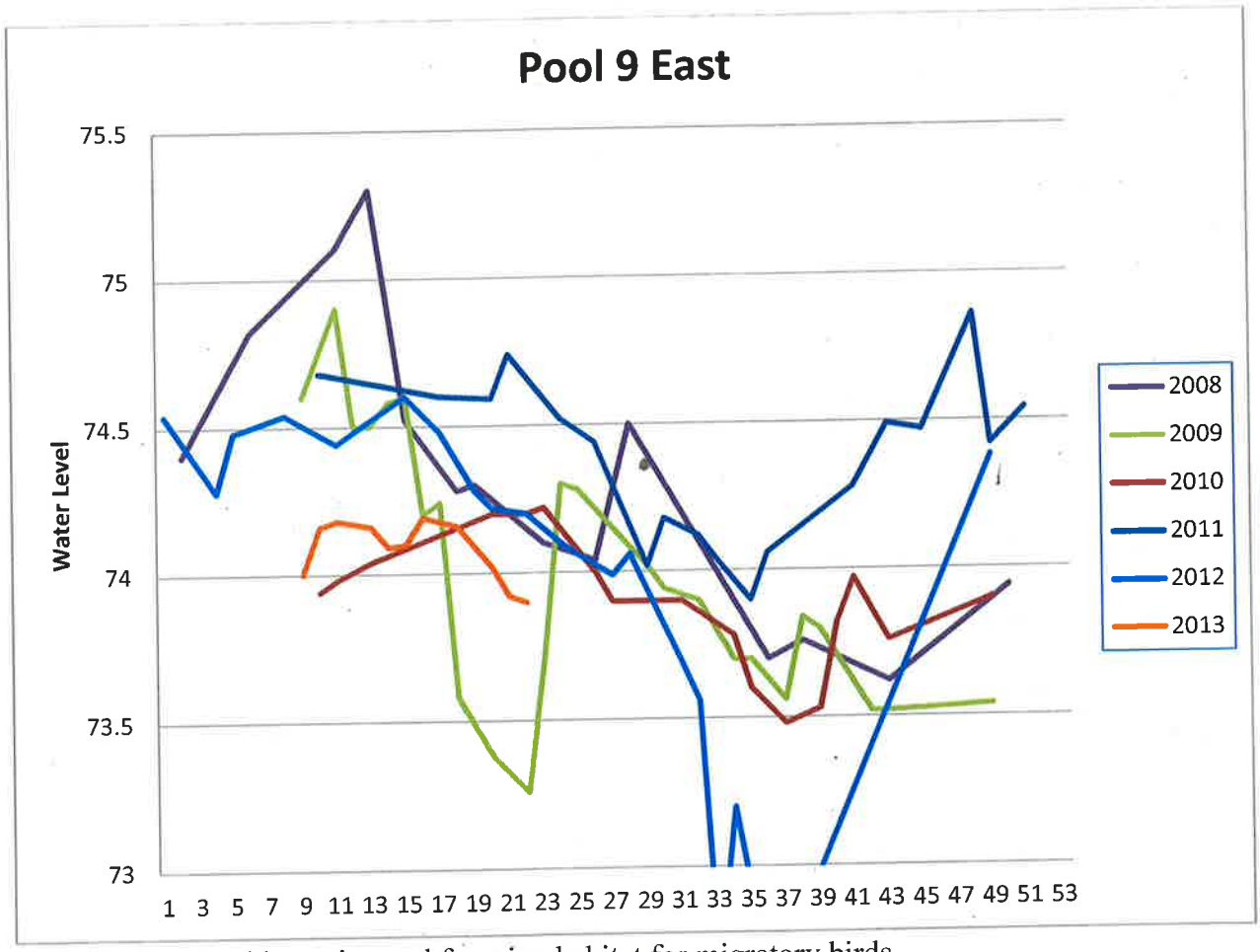
Desired water level		Wk #	2013 Date	Actual Water level Staff reading		Notes
old	new			old	new	
			Jan.			
			Feb.			
			Mar.			
50"						
			Apr.			
			May			
			June			
		28	July 10	2.80		
		33	Aug. 13	2.65	571.67	
			Sept.			
		43	Oct. 22	2.74		
			Nov.			
			Dec.			

Unit: Pool 9 East

Acres: 77

2012 Activity: Unit dewatered due to drought. Flowering rush mowed in south and east portion of unit. Reflooded in August with Thompson pumps. Good spring and fall waterfowl use.
2011 notes: No water was pumped in or out of this unit through 2009. Water levels fluctuated slightly but I think 75.3 is too high for this unit in April. A new staff plate was installed. 1.32=73.62.

Draw Down Years: 2012-drought, 2009 – drawn down for 1 month (mid may through mid June) for construction. Reflooded in June. Evapotranspiration resulted in low water levels and small areas of mudflats through the fall; 2006 – March draw down for April burn. Reflooded in April after burn with portable pumps. Flooding took longer than expected and unit greened up before flood. Reed canary grass was sprayed a few weeks after.



Unit Goals Provide resting and foraging habitat for migratory birds.

Objectives: Manage for hemi marsh conditions.

Strategies: Maintain full pool if possible. Spray portion of RCG in fall with marsh master, evaluate flowering rush for fall aerial spraying.

Management Strategy Constraints: Invasives are a major issue, especially RCG on west side, and flowering rush on east side. In spite of this, continues to see good use during spring and fall waterfowl migration, especially in the flowering rush areas.

Repairs Needed:

Unit: **Pool 9 east** - 73.6 = 2" or less over most of unit (excluding borrow area)

Desired water level	Wk #	2011 Date	Actual Water level Staff reading	Notes
		Jan.		
		Feb.		
		Mar.		
74.8?		Apr.		
		May		
	22	28	73.90	
	23	June 6	73.80	
	24	12	73.79	
	25	21	73.73	
	26	26	73.70	
	27	July 2	74.12	
	28	10	74.01	
	29	17	74.08	
	30		74.30	week 31 07/31 ≈ 74.17
	33	Aug. 13	74.14	
	34	21	74.00	
	35	27	74.00	
	36	Sept. 3	74.28	
	37	12	74.20	16-74.17
	38	19	74.12	
	39	27	74.23	
>73.6	42	Oct. 17	74.18	
74.0?	43	23	74.16	
	44	29	74.12	
	45	Nov. 7	74.19	
	46	13	74.19	
		Dec.		

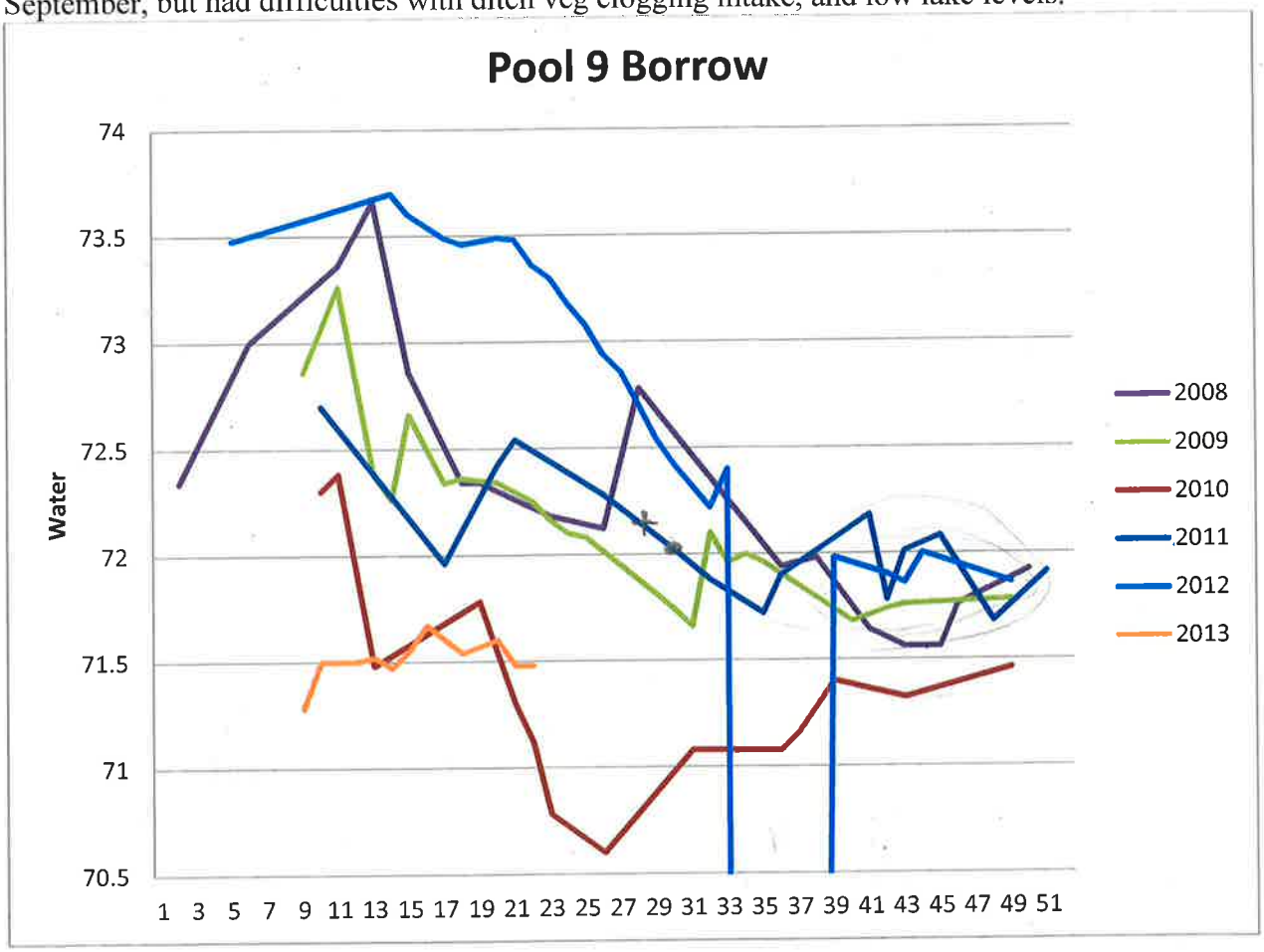
Unit: Pool 9 borrow area

Acres: 38

2012 Activity: Water levels dropped below gauge late summer due to drought, but deeper elevations still had water. Pump broken and needs to be repaired. Continue good waterfowl use in unit, vegetation is good, particularly east side.

2011 notes: Great waterfowl use in March thousands of ducks used this unit. Pumped some water out in November to get levels closer to lake level. A new staff plate was installed, 1.62=71.88.

Draw Down Years: 2012-late summer partially due to drought. 2010 – great annual plant response. 2005 – Unit was dewatered by mid-May. Good veg response. Unit was reflooded in September, but had difficulties with ditch veg clogging intake, and low lake levels.



Unit Goals: Provide habitat for waterfowl, wading birds, and shorebirds. Provide public use waterfowl hunting opportunities.

Objectives: Obtain 19 acres of deep to shallow submergent vegetation and 19 acres of deep to shallow emergent vegetation. Control Eurasian watermilfoil. Maintain 3 water blinds for waterfowl hunting season.

Strategies: Maintain full pool. Modify pump structure station with "Y" valve for 2 way pumping.

Management Strategy Constraints:

Repairs Needed:

I. **Pump is broken, and needs to be repaired and reset**
II. **Y valve on pump to pump in or out (won't need to change pipe over)**

Unit: **Pool 9 borrow area** (1.62=71.88)

Desired water level	Wk #	2011 Date	Actual Water level Staff reading	Notes
		Jan.		
		Feb.		
		Mar.		
71.96(1.7)				
		Apr.		
		May		
	22	29	71.48	
	23	June 6	71.40	
	24	12	71.32	
	25	21	71.32	
	26	26	71.28	
	27	July 2	71.48	
	28	10	72.27	
	29	17	72.08	
	30	~~22~~	72.24	week 31 07/31 72.13
	33	Aug. 13	72.03	
	34	21	≈71.96	
	35	~~27~~	~~71.88~~	
			~~72.11~~	
	37	Sept 2	72.11	@ 72.08
	39	27	71.94	
	42	Oct. 7	71.91	10/24 71.90 open 5"
71.06	44	28	71.58	
	"	29	71.46	
	43	23	71.90	
	45	Nov. 8	71.49	
	46	13	71.49	
		Dec.		

Unit: Darby Pump Operations & Pump Ditch settings

Week #	Desired water level	2011 Date	Actual Water level Staff reading	Notes
		Jan.		
		Mar.		
				Open ditch to lake ASAP
		Apr.		
		May		
		June		
		July 9		Open to Free Flow through pumps - level=
		Aug.		
		Sept. 3		Verify Open, Open P1 2" To ditch, Flap is held open
		Oct.		
				Open ditch to lake b4 ice

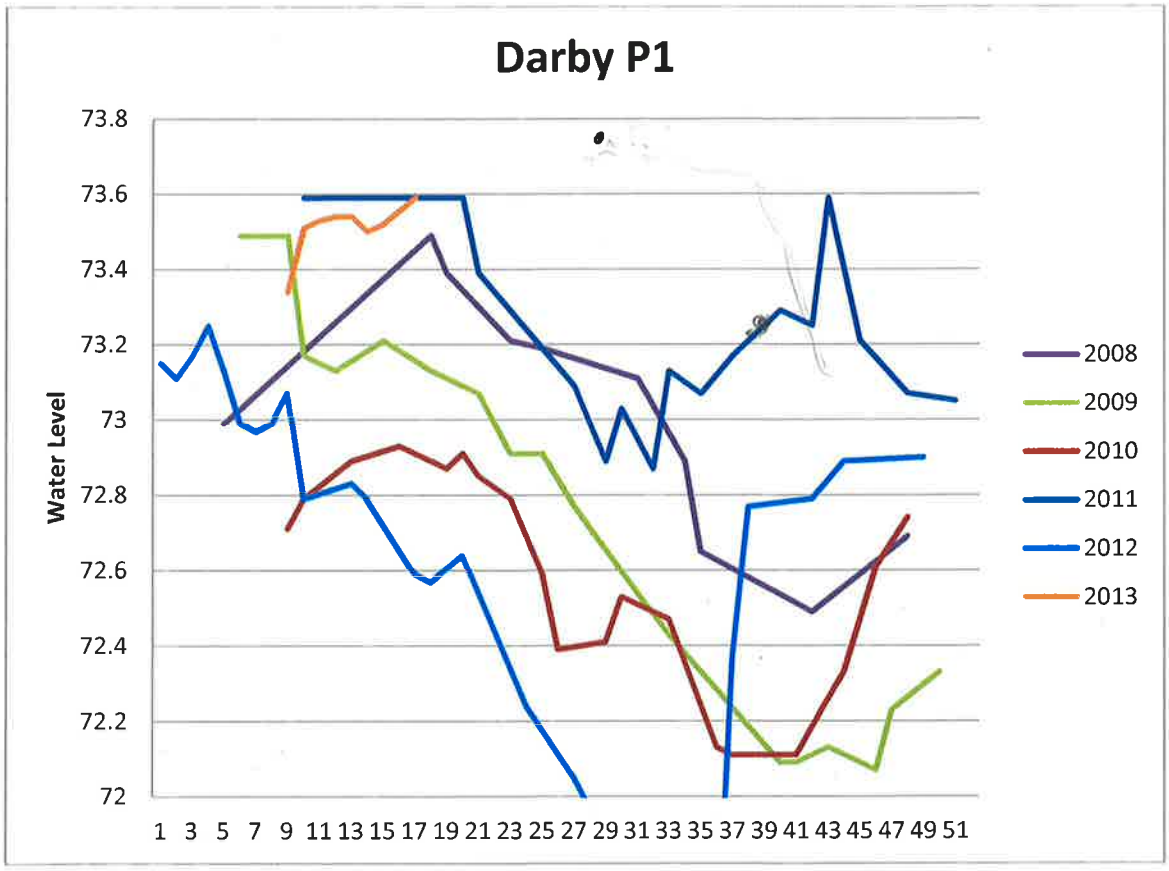
Unit: Darby Pool 1

Acres: 200

2012 Activity: Partial drawdown due to drought conditions, with mudflats in shallow locations. About a dozen wild rice plants observed in NW corner, first time this species has been observed.

2011 notes: Water was consistently high this year was hard to move water out because of high lake levels.

Draw Down Years: 2012-partial due to drought, 2007 – gauge moved over winter resulting in inaccurate water levels goals, so low water & evapotranspiration led to mudflats in July, rain events in August reflooded unit. 2003 or 2004?



Unit Goal: Provide resting and foraging habitat for migratory birds.

Objectives: Provide a hemi marsh rich in invertebrates and decrease P. Loosestrife infestations.

Strategies: Manage unit at full pool

Management Strategy Constraints: Purple loosestrife a significant factor, spreads during any drawdown.

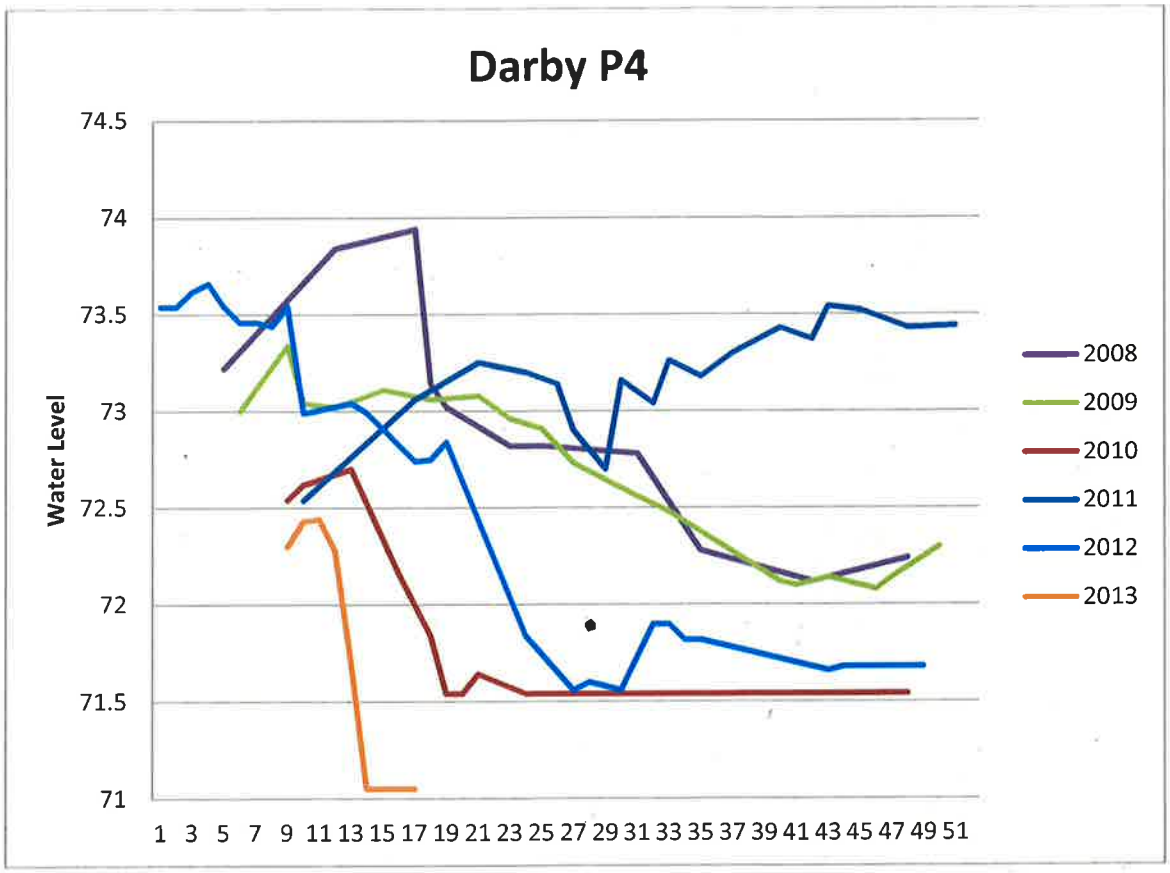
Repairs Needed:

Unit: **Darby Pool 1**
Maintain full pool. Significant amount of mudflats exposed at 571.7. **Add 510 to gauge reading.**

Week #	Desired water level	2013 Date	Actual Water level Staff reading	Notes
		Jan.		
		Mar.		
		Apr.		
		May		
		June		
28	72	July 9	73.75	
		Aug.		
36	72.4-	Sept. 3	73.71	11am Open 2" 6pm 73.53 - open to 3" .06/day
37	72.6	11	73.24	Still open
38		17	73.10	Open to 6", at least 1' head, little water movement, obstructed? - Tried 14", no change
43		Oct. 22	73.00	

Unit: Darby Pool 4

Acres: 170
2012 Activity: Partial drawdown due to drought. 571.8 may be good target for fall migration.
2011 notes: Water was drawn down in 2010 which led to good vegetation and bird use. This year unit was also consistently high because of high lake levels.
Draw Down Years: 2012, partial due to drought, 2010 – From May till September very good vegetation. Thousands of ducks used this unit.



Unit Goal: Provide marsh habitat for migratory birds.

Objectives: manage for plant diversity and hemi marsh conditions.

Strategies: Draw down in April-May for spring shorebird migration and to encourage vegetation growth. Bottom was consolidated by 2010 drawdown; drawdown in 2013 should help re-establish vegetation. Monitor vegetation regrowth and reflood if problematic invasive establishment is occurring.

Management Strategy Constraints: Unit has a history of purple loosestrife infestations. Particularly along the SE corner.

Repairs Needed:

Unit: **Darby Pool 4**
Add 510 to gauge reading.

Week #	Desired water level	2013 Date	Actual Water level Staff reading	Notes
		Mar.		
				Open to lake?
		Apr.		
				Draw down
		May		
				Mudflats
		June		
28		July 9	71.78	
		Aug.		
36	571.8	Sept. 3	71.88	6 71.82
37		11	71.78	
38		17	71.73	
43		Oct. 22	71.83	

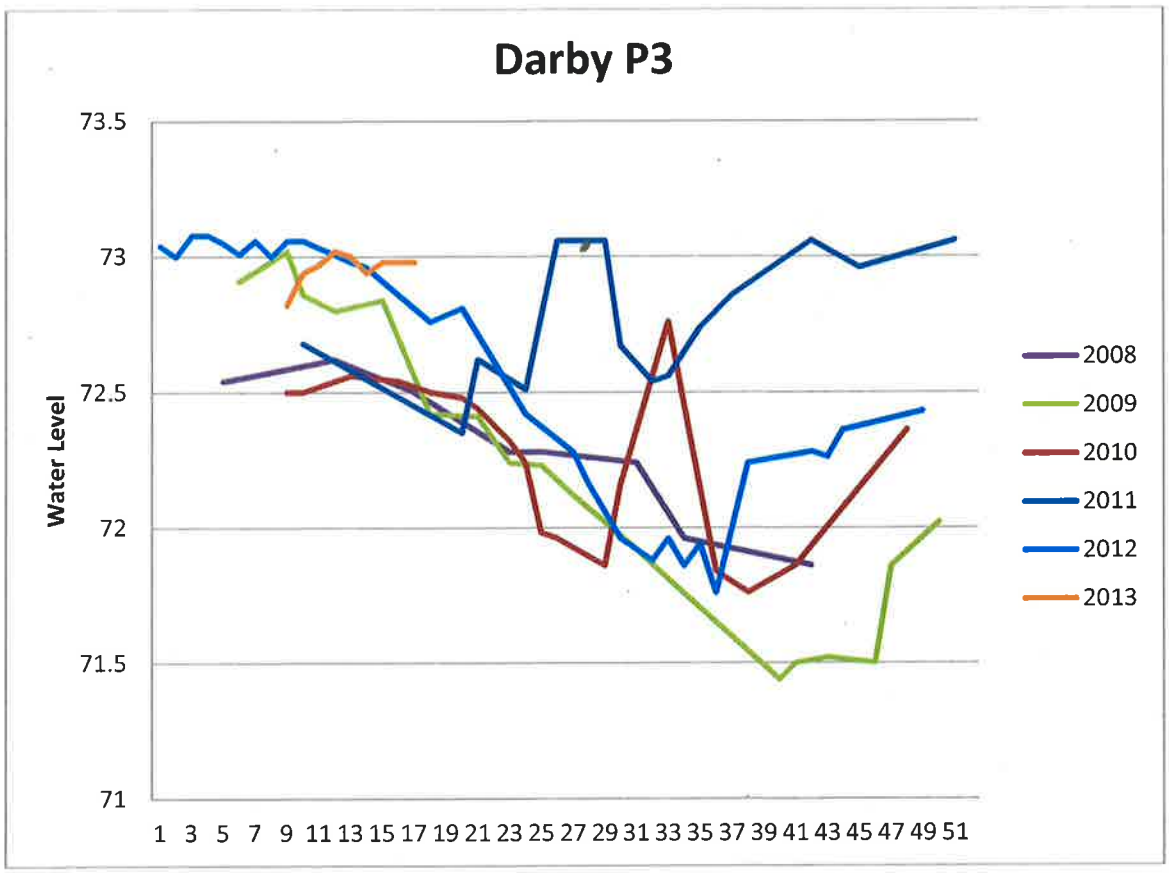
Unit: Darby Pool 3

Acres: 25

2012 Activity: Water in unit throughout year, added water in September. Limited bird use.

2011 notes: Ditch flowing into unit in July bringing water level up needed to add a board to the agri drain to hold water in unit.

Draw Down Years: 2006?



Unit Goal: Provide resting and foraging habitat for migratory birds.

Objectives: Provide a combination of both annual and perennial vegetation in a hemimarsh.

Strategies: Maintain full pool, evaluate as potential fall drawdown.

Unit could use drawdown and disking. Purple loosestrife consequences could be severe however. Could also try smashing with marsh master.

Management Strategy Constraints: Full pool is limited by low spots is south dike. Purple loosestrife can be an issue.

Repairs Needed:

II. South dike needs raised

Unit: **Darby Pool 3**
Full pool (2.64) **Add 510 to gauge reading.**

Week #	Desired water level	2013 Date	Actual Water level Staff reading	Notes
		Mar.		
		Apr.		
	2.5-2.6			
		May		
		June		
28		July 9	73.05	at or above max pool - slight flow over boards
		Aug.		
36		Sept. 3	72.89	6th 72.85
37		11	72.80	
38		16	72.74	
43		Oct. 22	72.43	Some leak b/w boards, reset - OK, Winter normal level good

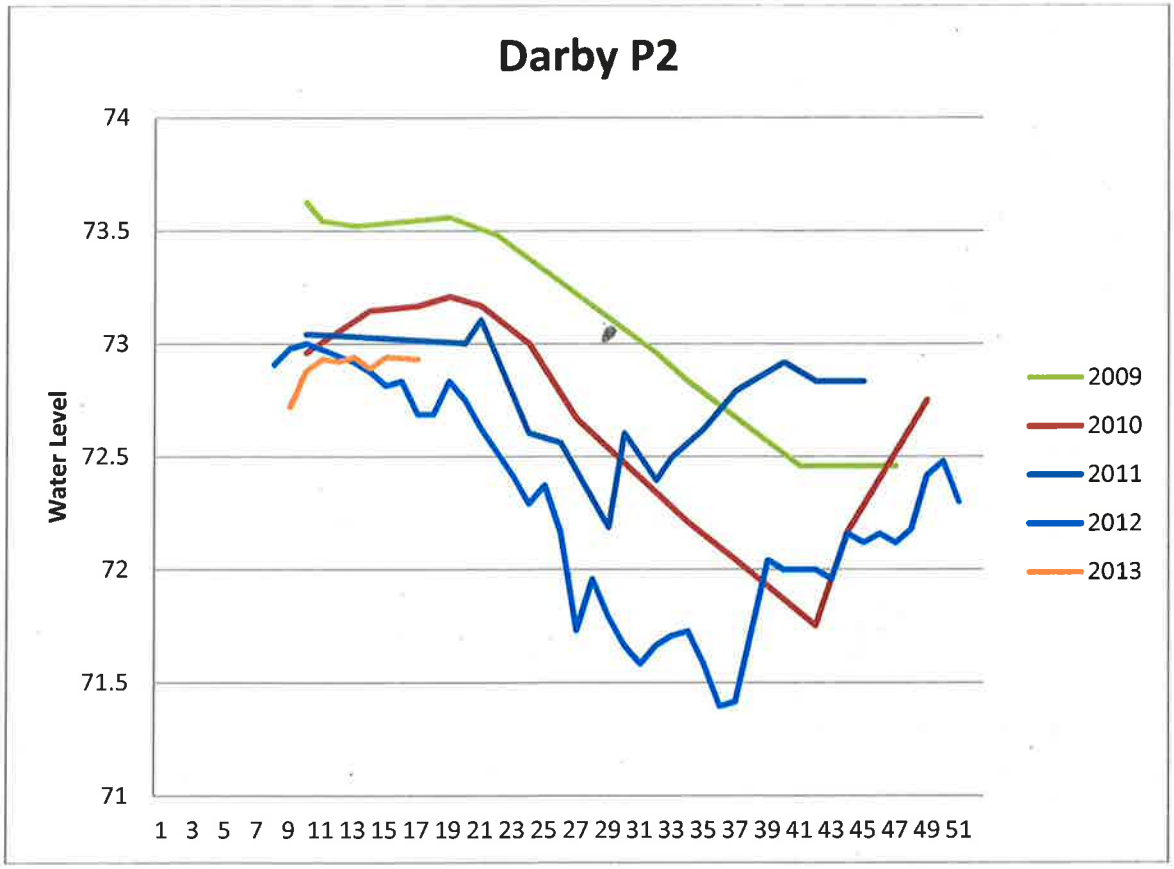
Unit: Darby Pool 2

Acres: 25

2011 Activity: Unit had mudflats by September due to drought, added water end of September.

2011 notes: Boards are set at 60" seems to be a good level for this unit. 63 or 64"' is about full pool.

Draw Down Years: 2012-drought, other years unknown



Unit Goal: Provide resting and foraging habitat for migratory birds.

Objectives: Manage for hemi marsh conditions

Strategies: Manage unit at full pool. Consider drawdown, spray, and disk of purple loosestrife.

Long term management options could be include a green tree reservoir.

Management Strategy Constraints: Significant purple loosestrife issues.

Repairs Needed:

Unit: **Darby Pool 2** 16" Board

Maintain full pool. – Measure water surface to top of box on SW corner.

Add 510 to gauge reading.

Week #	Desired water level	2013 Date	Actual Water level Staff reading	Notes
		Mar.		
		Apr.		
		May		
		June		
28		July 9	73.02	Just flowing out
		Aug.		
36		Sept. 3	72.82	6th 72.76
37		11	72.70	
38		17	72.621	
43		Oct. 22	72.76	Water Board level OK, could add 1 more
63"64"				

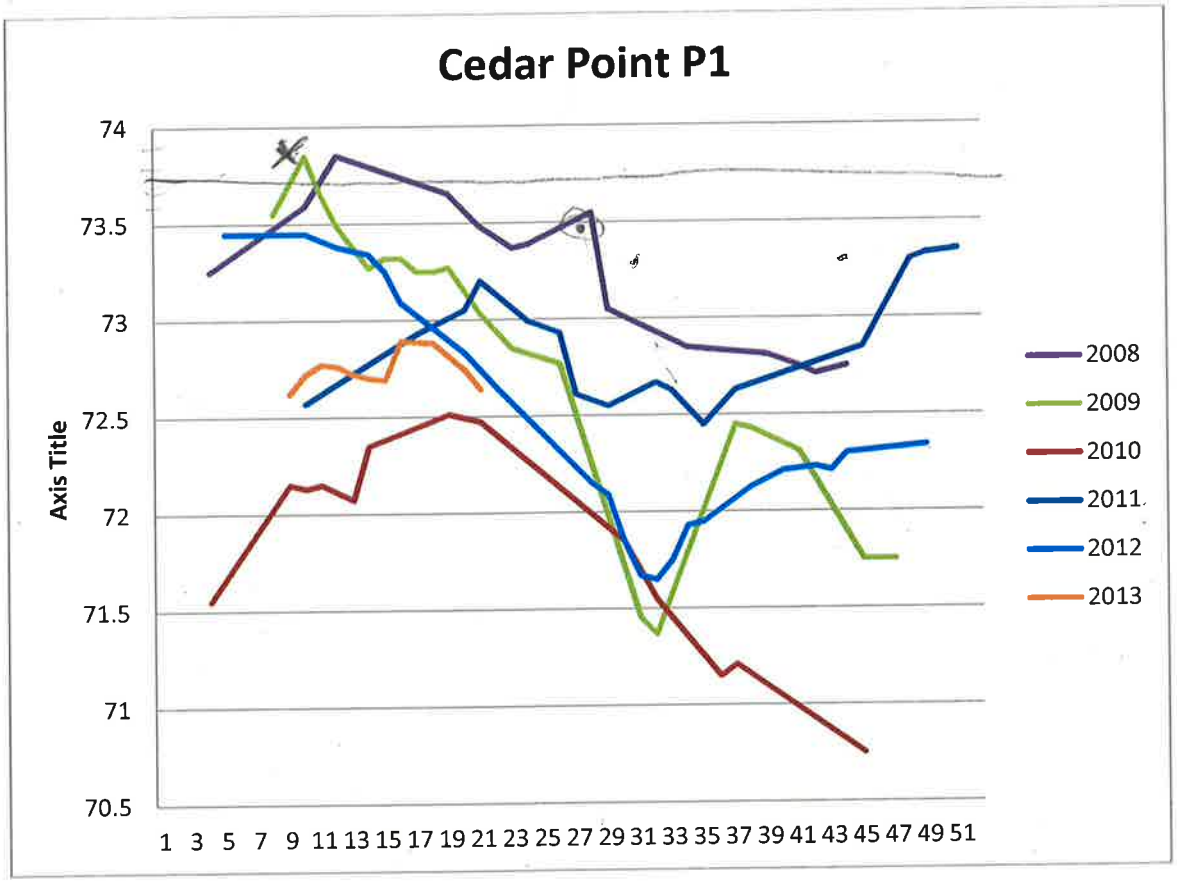
Unit: Cedar Point Pool 1

Acres: 1,460

2012 Activity: Partial drawdown due to drought, added water when possible. Blocked failed west structure to prevent water loss. Pump intake eventually silted in. Pump intake cleaned spring 2013, but only in first part of raceway. Excellent wild rice production.

2011 notes: Unit stayed consistent all year. Siltation is blocking the lake intake. In December free flowed water from pool 1 into lake we also opened pool 2 to let water flow into pool 1 because 2 was too high.

Draw Down Years: 2010- was a true drawdown due to drought. 2012, 2009, 2007, 2006, 2005 - Evapotranspiration leads to partial draw down.



Unit Goal: Provide nesting, foraging, and resting habitat for a variety of migratory birds and wildlife. To maintain populations of rare and endangered plants.

Objectives: Maintain full pool.

Strategies: Blow out intake siltation when possible during seiches. Add water, if possible, to prevent consecutive year drawdowns.

Management Strategy Constraints: Limited water access due to west side structure failure, and sand deposition at pump intake.

Repairs Needed: Possible long term project to fix sediment problem in the pump by dredging, both in lake and in unit.

Unit: **Cedar Point Pool 1**

Week #	Desired water level	2013 Date	Actual Water level Staff reading	Notes
		Jan.		
	3.7- 4.0	Mar.		
		Apr.		
		May		
	22	28	72.59	
	23	June 4	72.61	
	24	12	72.56	
	25	21	72.57	
	26	27	72.72	
	28	July 9	73.42	12 73.46 15 73.46
	29	17	73.414	18 73.40
	30	23	73.50	
	31	31	73.37	
	32	Aug. 8	73.30	
	33	16	73.24	
	34	20	73.16	
	35	2	73.16	
	37	Sept. 12	73.37	
	38	19	73.29	
	40	30	73.32	
	42	Oct. 12	73.31	23 73.28
	43	23	73.32	
	44	29	73.27	
	45	Nov 5	73.34	
	46	15	73.33	

	Date	P1	P2	
Hours	6/19/13	8202.2	8664.8	started 10:15 am
	7/9/13	8687.0	9149.6	
		484.8	484.8 ✓	20.2 days
→	7/15/13	8826.8	9289.4	
		624.6	624.6	26 days

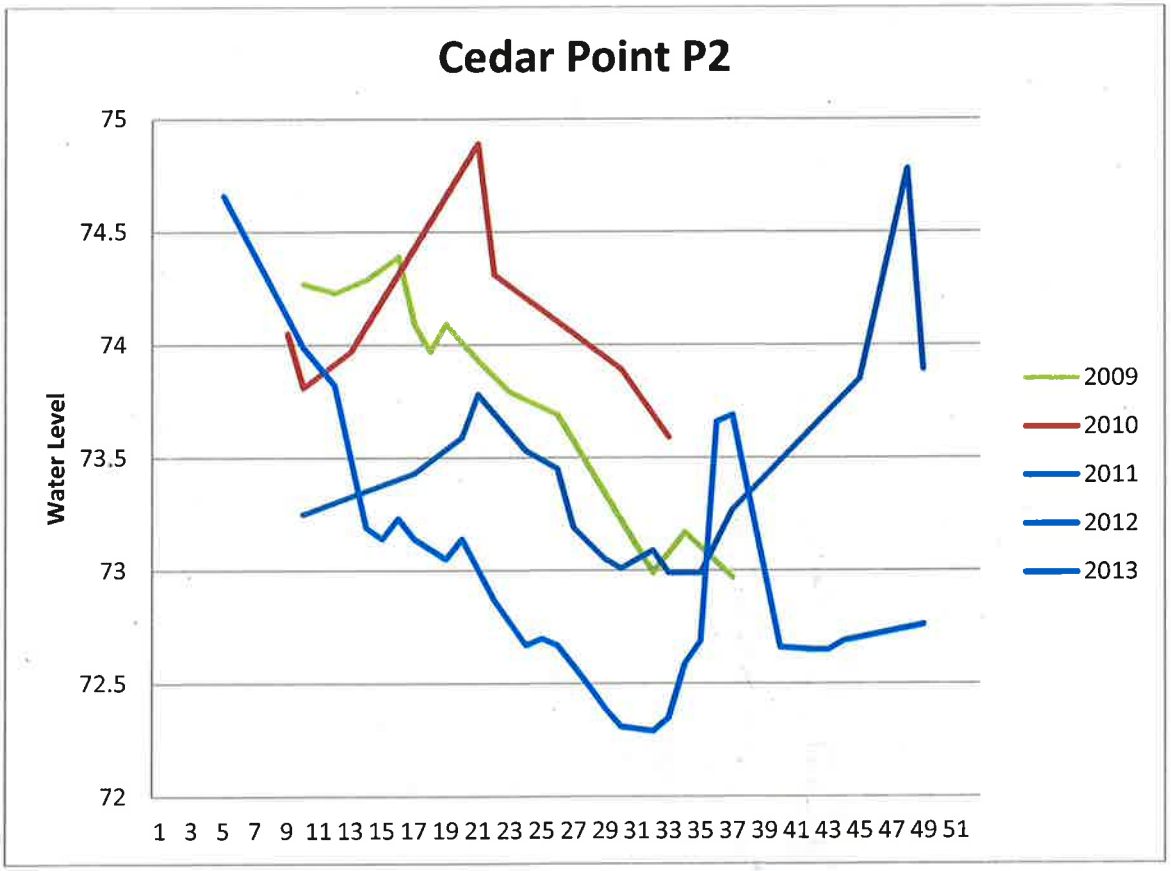
Unit: Cedar Point Pool 2

Acres: 135

2012 Activity: Nearly complete drawdown due to drought. Aerial sprayed phragmites in fall.

2011 notes: The gate was opened in June and December to pool 1 help keep water out of Toledo Water Plant property and to add to pool 1. There are limited management capabilities in this unit.

Draw Down Years: 2007 – unit was pumped down with portable pump and completed by end of May for construction on west dike. Unit was reflooded in November with the pumps located at Toledo Pumping station.



Unit Goal: Provide nesting, foraging, and resting habitat for a variety of migratory birds and wildlife.

Objectives: Manage for hemimarsh conditions, control phragmites

Strategies: Drawdown and burn unit in spring to remove dead phragmites from aerial spraying in fall 2012. Add water if possible after burn.

Management Strategy Constraints: Too high of water backs up onto Toledo water plant and Gradel property due to failure of west dike. Limited options for water management. Water can be added from water plant FWS pumps, but this water is treated at lake intake to prevent zebra mussels accumulation. Significant phrag issues. Water readings from gauge in borrow pit do not reflect unit conditions at lower unit levels.

Repairs Needed:

I. West end dike eroded away, needs replaced to manage for full pool.
II. IGLD staff plate, placed in unit
III. Check pipe and flap gate between borrow pit and unit, at water plant walkway.

Unit: **Cedar Point Pool 2**
Keep water as high as possible, without flooding neighbor's woods (max is 2.70)

Week #	Desired water level	2013 Date	Actual Water level Staff reading	Notes
		Jan.		
		Mar.		
		Apr.		
	2.7			
		May		
22		28	2.58	
23		June 4	2.57	
24		12	2.54	
25		21	2.54	
26		27	2.49	11 2.23
28		July 9	1.67	Open to Pl - Turned 2.27 Open 5" 350 12 2.25
29		17	2.32	15 2.30
30		23	2.46	
31		31	2.50	
32		Aug. 8	2.37	
33		16	2.26	
34		22	2.17	
35		27	2.16	
37		Sept. 12	2.40	
38		18	2.32	
11		19	2.28	
40		30	2.32	
42		Oct. 15	2.26	23 2.24
43		23	2.24	
44		29	2.20	
45		Nov 5	2.28	
46		15	2.27	

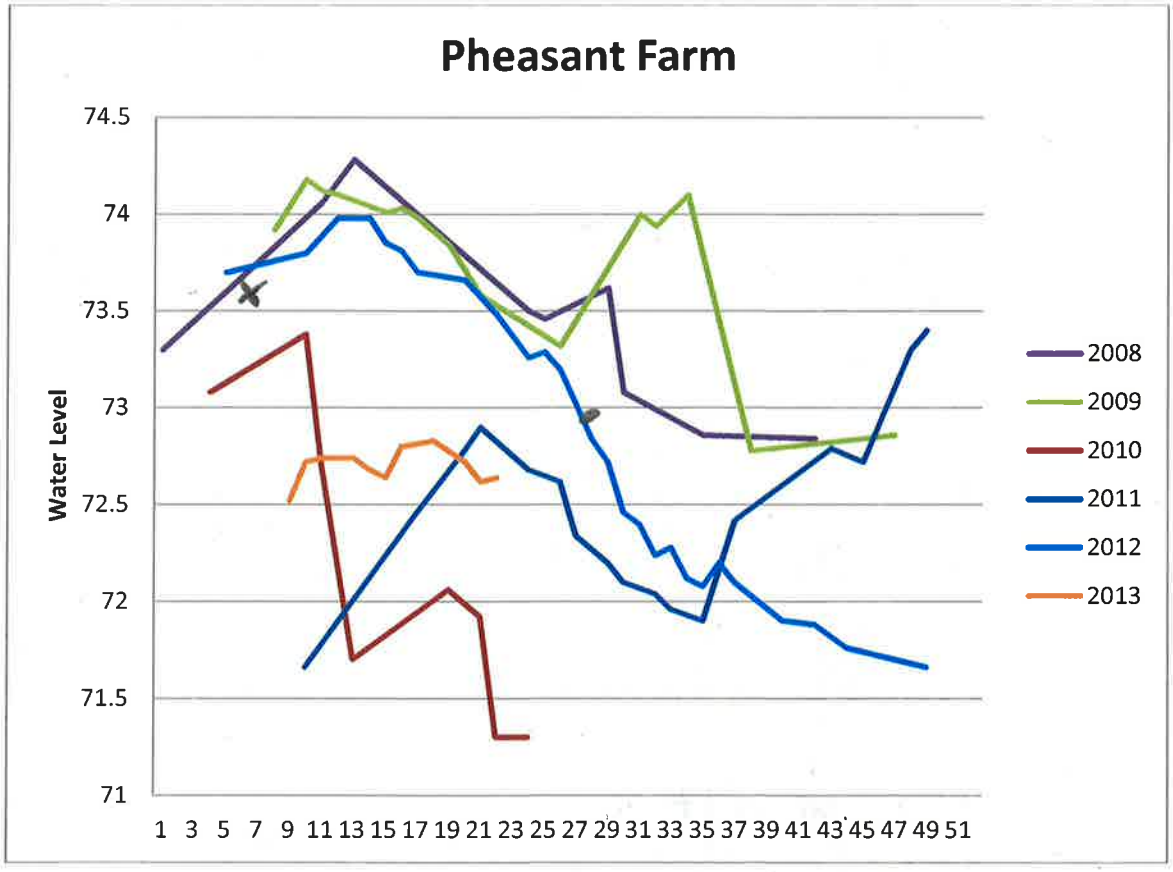
Unit: Cedar Point Pheasant Farm

Acres: 155

2012 Activity: Unit mostly dewatered by end of year, due to drought. Flap gate set to gain water. Aerial sprayed phrag in fall.

2011 notes: Set WCS to flow in after construction of east dike was complete. No active management. Opened unit to county ditch for drainage in March. Then set up a portable pump to pump out unit for construction. Which began in June. Dikes rebuilt in 2010.

Draw Down Years: 2005- low water & Evapotranspiration led to a late summer/fall draw down.



Unit Goal: Limit invasives. Vegetation structure/type driven primarily by annual rainfall variation.

Objectives: Be opportunistic, limited capabilities due to lack of consistent water source.

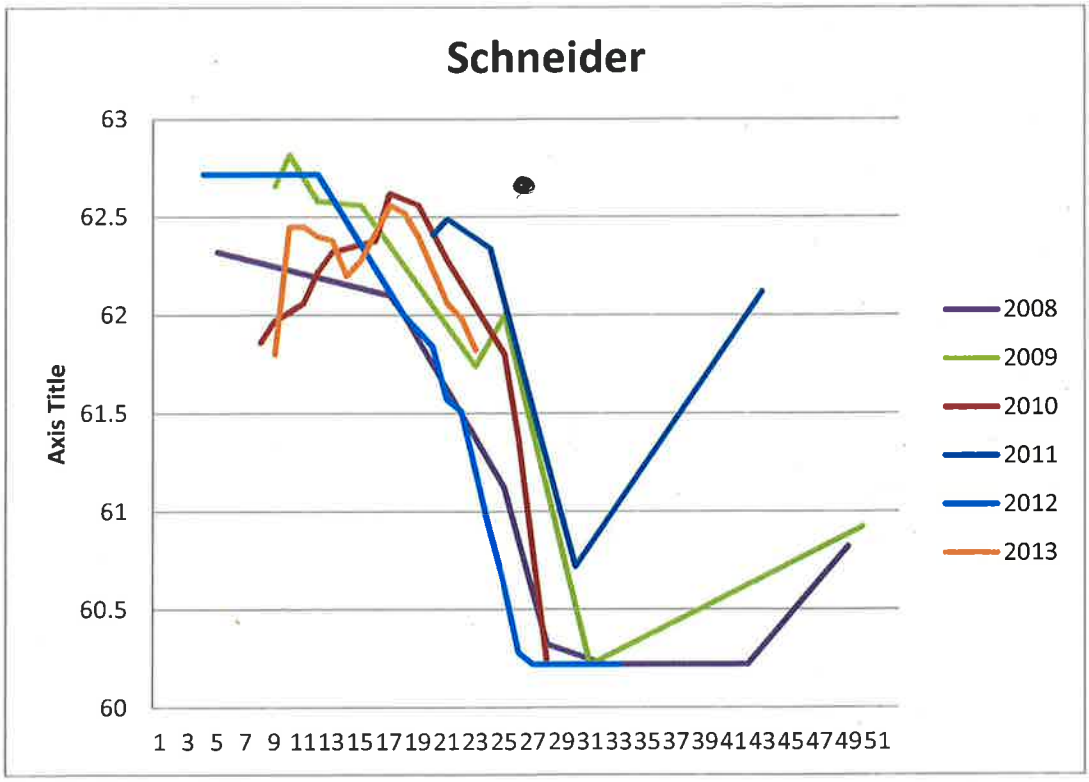
Strategies: Monitor and treat invasives, especially phrag. Maintain high water levels within limited capabilities.

Management Strategy Constraints: Gate to county drainage ditch leaks. Lack of water source,

Repairs:

Unit: **Cedar Point Pheasant Farm**

Week #	Desired water level	2013 Date	Actual Water level Staff reading	Notes
		Jan.		
		Mar.		
		Apr.		
		May		
	22	28	72.64	
23		June 4	72.62	
24		12	72.58	
25		21	72.56	
26		27	72.56	
27		July 2	72.80	
28		9	72.94	
29		17	72.92	week 31
30		23	~~7~~2.96	31 ~~7~~2.44
32		Aug. 8	762.80	
33		16	762.65	
34		22	762.61	
35		27	762.60	
37		Sept. 12	62.81	
38		18	72.76	
11		19	72.74	
40		30	72.79	
			72.76	
42		Oct. 18	↓	23 72.78
43		23	72.79	
44		29	72.74	
45		Nov 8	72.85	
46		15	72.83	



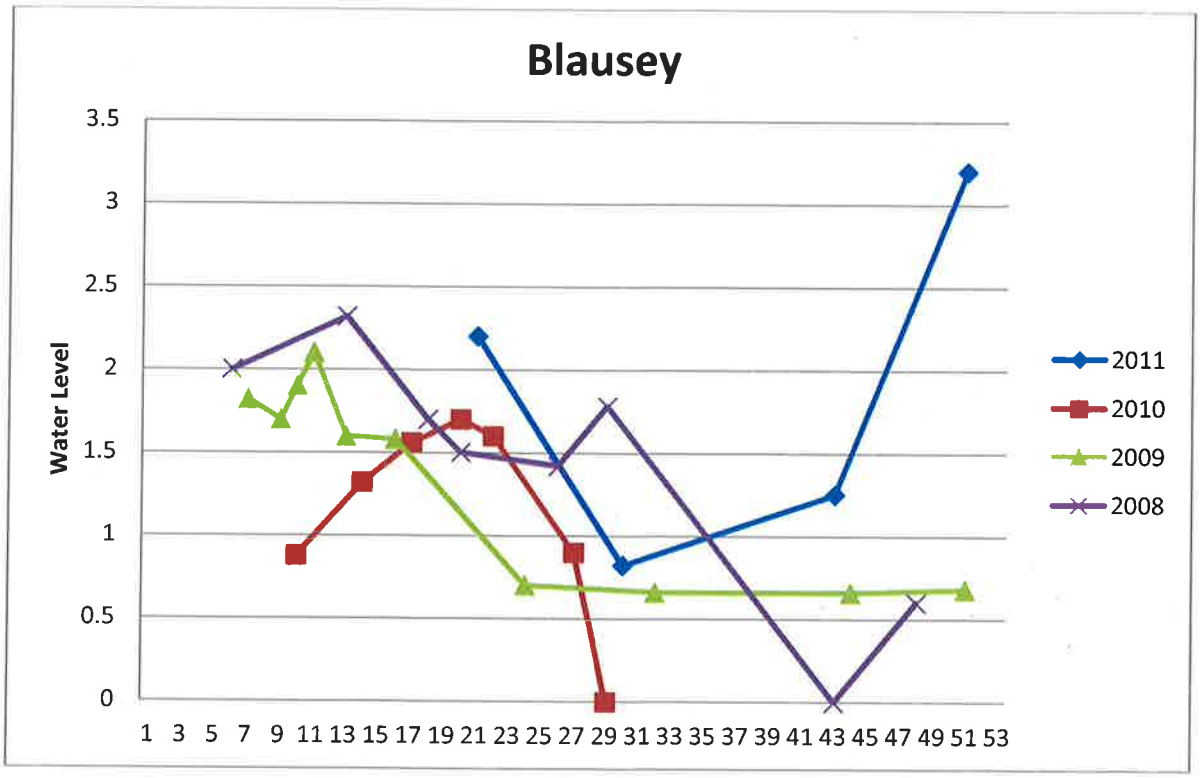
Unit: Schneider

2012 Activity: Mowed and disked cattail and phragmites.

Draw down years: Annually, lack of water2008- Unit was dewatered by mid June for construction on neighbor to west wetland project. In addition, areas of invasives were mowed & disked in August.

Week #	Desired water level	2013 Date	Actual Water level Staff reading	Notes
28		7/9/13	2.46 72.67	Ditch weeds as high as unit
30		7/23	62.62	
32		8/9	62.30	
34		8/22	61.86	
35		8/29	61.68	
38		9/19	61.30	
40		9/30	61.32	
42		10/17	61.22	
43		10/23	61.14	
44		10/29	(under plate)	0.77 old plate 70.98
45		11/8	61.18	.97 71.18
46		11/14	≈61.14	.93

Notes: Pulling boards to remove water should be done carefully to ensure not to overfill drainage ditch and flood neighbor to the east.
Strategies: Portable pump water in if available. Set boards to capture all rainfall.



Unit: Blausey South East unit—above graph historical, complete redesign and construction of Blausey in 2012.

2011 Activity: No active management. Evapotranspiration draw down in June.
Draw Down Years: 2008 & 2007 - This unit fills up over winter & early spring. Evapotranspiration results in a late summer draw down. Construction was completed in 2005.

Week #	Desired water level	2013 Date	Actual Water level Staff reading	Notes

Unit: Blausey North East unit

2011 Activity: Pump was periodically turned on after rain events to keep flooding down. Restoration project will be done next year.

Draw Down Years: Construction was completed in 2008.

Week #	Desired water level	2011 Date	Actual Water level Staff reading	Notes

Navarre

Security Supervisor: 419-321-7557

2010 Activity: unknown

Draw Down Years: In 2007 & possibly 2008, Pool 2 high water was pumped down by plant employees in early April.

Notes: Pool 1 also has pumping capabilities. There are double flaps between P2 & P3. Water cannot be pumped into pool 2. P3 has double flap gates into the Lake and has a pump that pumps out. P3 has a little watershed from the runoff on the west end. The lock combo is 7556.

2007 Levels:

	May 22	November 6	
Pool 1	0.78	?	-(veg looks good)
Pool 2	2.45	1.62	-(lots of ducks-2000-2500, good veg)
Pool 3	0.75	0.18	-3000 – 3500 ducks. Beaver action on south side. Muskrats thick in NE corner and SW side, but not too bad. Veg recovering.

2008 Levels:

Nov 4

Pool 1		
Pool 2		0
Pool 3		0.10

2009 Levels:

	April 22	Nov. 9	
Pool 1	0.92	1.22	-spring notes: >500 ducks (ruddy, scaup, Gadwall)
Pool 2	2.5" over blue pipe to P3	low	
Pool 3	0.40 (pump on)	9.58	- spring notes: >800 ducks

Week #	Unit	2011 Date	Actual Water level Staff reading	Notes

Other Satellite Properties

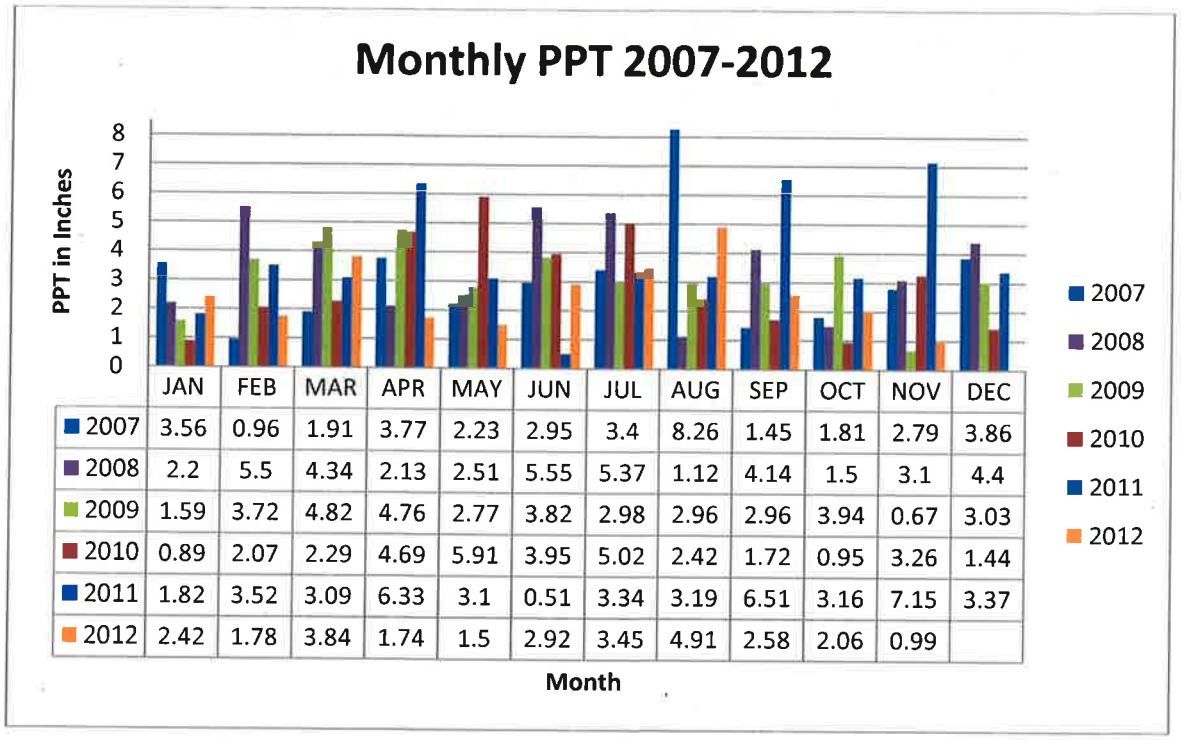
Diefenthaler:
2009 Activity: Evapotranspiration led to a draw down in June, except for main channel. Draw Down Years: 2009 & 2008 – Evapotranspiration led to draw down in August except for main channel. It was flooded again in November from rains; 2007 - July, the unit was mistakenly drawndown. No activity on 2010
2011- Maintain full pull, floats set to come on to prevent flooding into barn.

Kontz:
2009 Activity: Unit is currently open to lake levels. The wetland remained flooded throughout entire season (Spring-Fall). Hairy willow herb was treated on the upland just south of SR 2 and before the woods. Very little hairy willow herb was found along the wetland transitional areas.
No activity in 2010
2011- Unit open to turtle creek via failed structure under SR2- no active management.

Helle:
2009 Activity: No active management.
March & April 2009: water was across all of unit and base of hill on SE side property owner. Water was in woods all the way to road.
2011- Take off high water in Nov-Dec. Entire unit flooded to road, and water backed up with farm field. 7/9/13 - wetland - just flowing over board

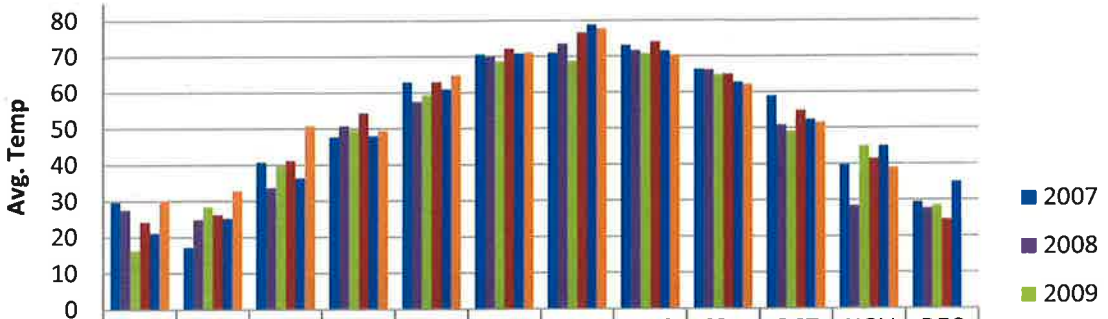
Gaeth-Kurdy:
2009 Activity: Eric maintained subpump in ditch behind his house. This pump is very costly and should be replaced with regular pump.
2011- In general, pump when necessary to prevent flooding.

Boss:
2009 Activity: A stop log structure was installed on the drainage ditch, and the driveway culvert was replaced because it had collapsed.
2010- Field not flooded
2011- Field flooded in May for shorebirds, boards removed late May, only partially down because road ditch is so high boards added in Dec. to hold water.



	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
2007	3.56	0.96	1.91	3.77	2.23	2.95	3.4	8.26	1.45	1.81	2.79	3.86
2008	2.2	5.5	4.34	2.13	2.51	5.55	5.37	1.12	4.14	1.5	3.1	4.4
2009	1.59	3.72	4.82	4.76	2.77	3.82	2.98	2.96	2.96	3.94	0.67	3.03
2010	0.89	2.07	2.29	4.69	5.91	3.95	5.02	2.42	1.72	0.95	3.26	1.44
2011	1.82	3.52	3.09	6.33	3.1	0.51	3.34	3.19	6.51	3.16	7.15	3.37
2012	2.42	1.78	3.84	1.74	1.5	2.92	3.45	4.91	2.58	2.06	0.99	

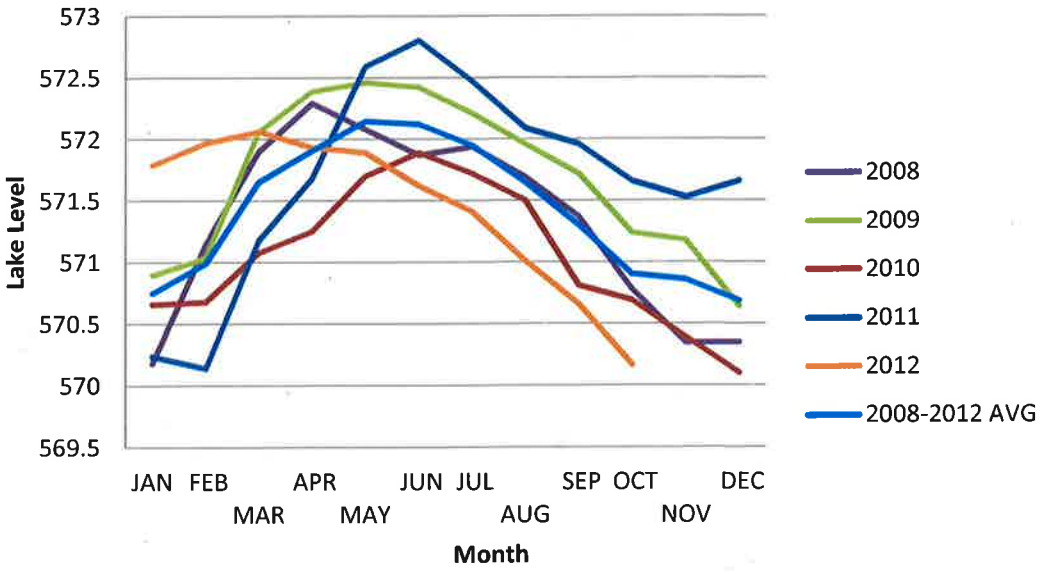
Monthly Avg. Temp



	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
2007	29.9	17.3	40.9	47.8	63	70.7	71.1	73.2	66.5	59	39.8	29.5
2008	27.6	25	33.8	50.8	57.6	70.1	73.6	71.7	66.3	50.9	28.4	27.7
2009	16.5	28.6	39.7	49.7	59.4	68.7	68.9	70.9	65	49.2	45.1	28.6
2010	24.3	26.3	41.2	54.4	63	72.2	76.7	74.1	65.1	54.9	41.5	24.6
2011	21.2	25.3	36.4	48.1	61.1	70.8	78.9	71.6	62.8	52.4	45.1	35.1
2012	30.2	32.9	50.9	49.5	64.9	71.1	77.9	70.5	62.2	51.6	39	

Month

Monthly Avg. Lake Levels



Unit	YR DD	Dates	Notes
Goose Pen	2010	4/14-12/9	
	2009	7/17-12/7	
	2006	3/20-Oct.	
Woodies Roost East	2011	7/7-10/3	Construction
	2009	4/22-8/26	
	2006	April-Aug.	
Woodies Roost West	2011	7/7-11/7	Construction
	2009	4/22-8/26	
	2006	April-Aug.	
Show Pool	2009	9/17-12/7	
Pool 1			
Entrance Pool	2010	4/14-10/9	
MSU 8B			
Pool 2C			
Pool 2B	2010		
	2006	March-June	
Pool 2A	2009?		
	2007	March-July	
MSU 8A	2010	8/1-11/9	
MSU LL	2010	Sept-Dec	
	2009	Sept-Dec	
Mini Marsh			
HU 93	2011	7/1-9/5	
	2009	7/17-9/22	
MSU 7			
MSU 6	2008	6/16-9/9	
	2006	July-Sept	
HU 6	2011	July-Sept	Construction
	2010	4/28-10/8	Construction
	2009	Aug-Oct	
MS 2 North			
MS 2 South			
MSU 3	2009	7/17-10/21	
MSU 5	2011	8/8-12/2	Good Shorebird Use
	2008	Sept-Dec	
MSU 4	2008	5/13-9/6	
	2007	6/7-10/9	
Pool 3	2010	9/8-12/?	
Metzger Marsh	2007	3/22-6/7	
Pool 9 East			
Pool 9 Borrow	2010	5/12-10/1	
Darby P1			
Darby P2			
Darby P3			
Darby P4	2010	5/3-12/?	
CP Pool 1	2010	Aug-Past Dec.	
CP Pool 2	2007	Apri-Nov.	
CP Pheasant Farm	2010	6/1-Past Dec.	

Things needing repaired throughout the year:

NOTES: